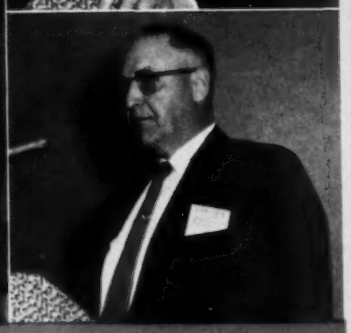
October 1959

Convention report

p. 23



...vay TRACK and STRUCTURES

Mobile welding outfits pay off

p. 29

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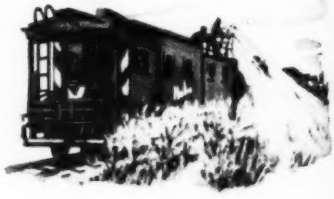

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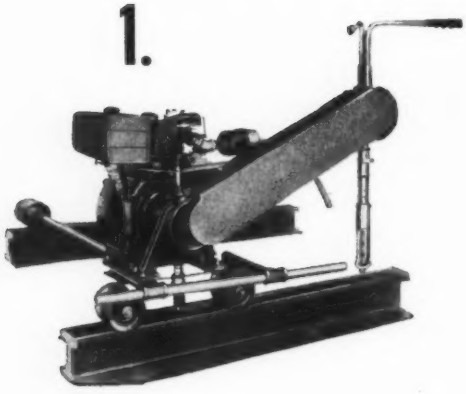

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1. Bores 20-26 holes per min. 2¾" deep.
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4. It has been estimated that when you bore spike holes, you eliminate 75% of regauging—a very worthwhile saving.

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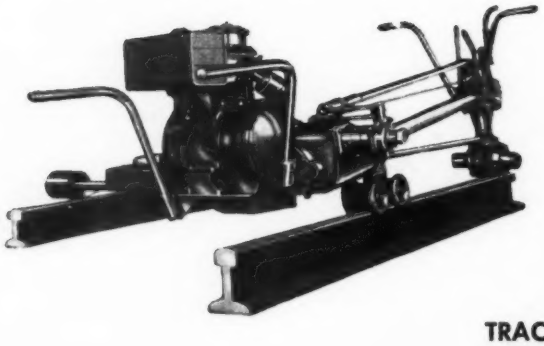

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Railway TRACK and STRUCTURES

OCTOBER

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Report on conventions of Roadmasters' and Bridge & Building Associations gives highlights of joint and separate sessions.

Mobile welding outfits pay off 29

Repairs to frogs and crossings are now made in track on Lehigh Valley by two-man welding crews using specially equipped trucks.

WP builds prestressed concrete trestle 32

Frank R. Woolford, chief engineer of the Western Pacific, tells why this road is constructing a bridge with prestressed stringers and caps.

How CNR tunneled in 'quicksand' 36

Excavating job at Mount Royal tunnel was simplified by freezing unstable material with brine circulating in pipes driven into it.

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◀ Don't miss . . .

Do bridge ties have to be as long as they are on open-deck timber structures? The Illinois Central doesn't think so. For use on trestles with three-ply chords this road is now using ties 8 ft 6 in long.

. . . in the November issue

McWILLIAMS PRODUCTION TAMPER

With split head design and positive penetration and compaction under the rail-bearing area of the tie, this provides highest quality tamping at speeds up to 800 feet per hour

Track stays Up Longer with

Track tamped with these units will extend the surfacing cycle by 30% or more over other machines in use—in all cases, providing the lowest tamping cost per year. ***Write for new Tamper Bulletin T-600.***

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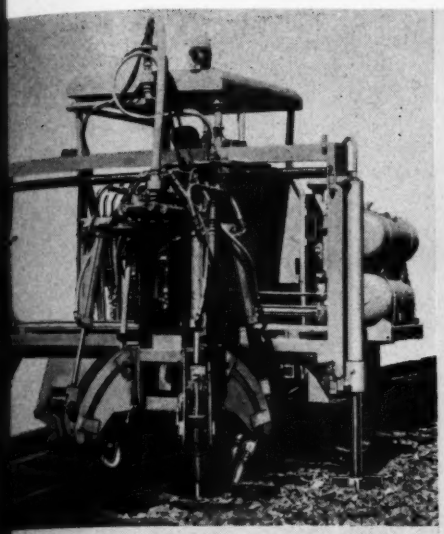
Speed and ballast compaction are sufficient to keep ahead of multiple tamping—with no need for over-raising.



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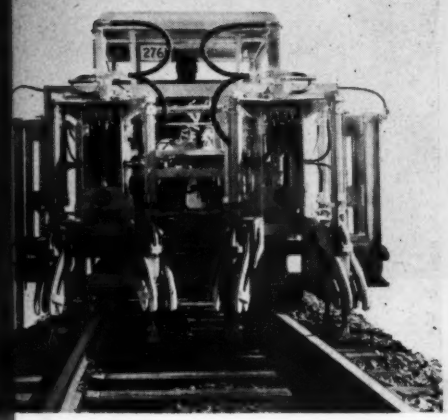
The most useful and the most widely used spot tamper, this fast, mobile machine delivers big-tamper ballast compaction.



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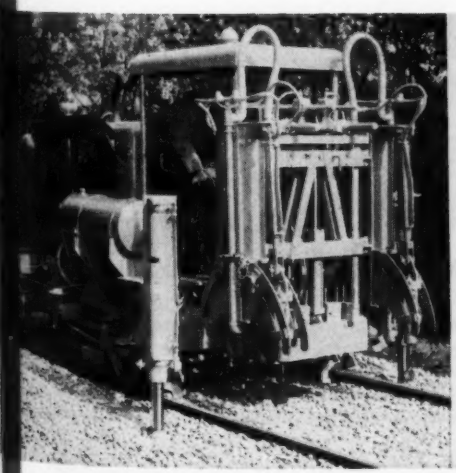

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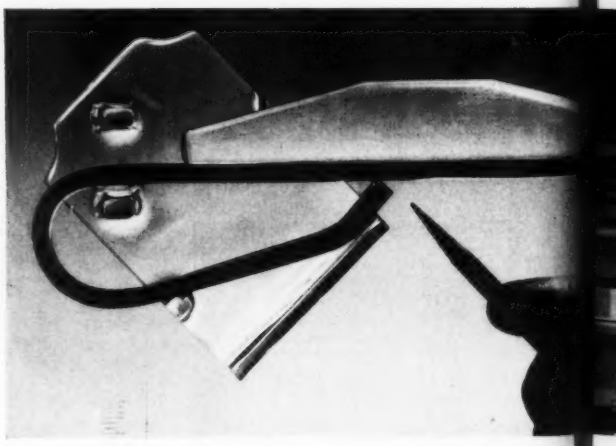
1 BUY MORE HOLDING POWER. The True Temper BULLDOG Rail Anchor *alone* is built with two factory-assembled elements (a clamp and a spring) that multiply the holding power of each other. You get a unique two-way *sustained* grip. This is especially important for welded rail.

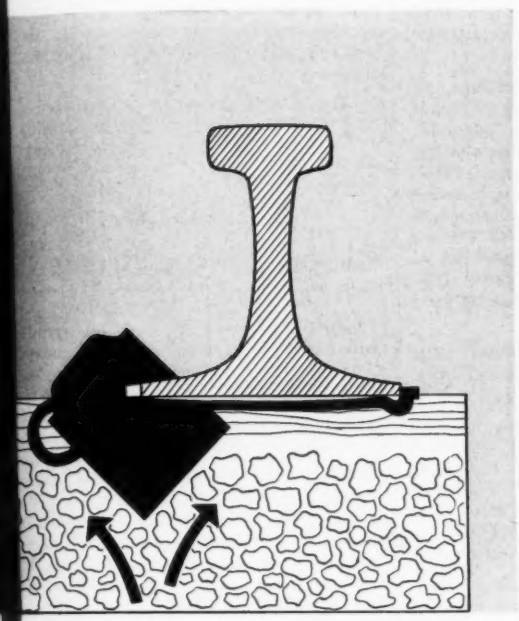
How to save money

2 BUY TIE PROTECTION. *Deep* tie-bearing surface transmits load over a wide, flat area to avoid tie damage. It doesn't bear on tie plate, so can't damage tie through spike disturbance.



3 BUY EASY DRIVING. Whether applied manually or mechanically, the BULLDOG installs faster. Time and effort usually cut in half because improved design means a straight more direct path for striking force to seat end of spring.

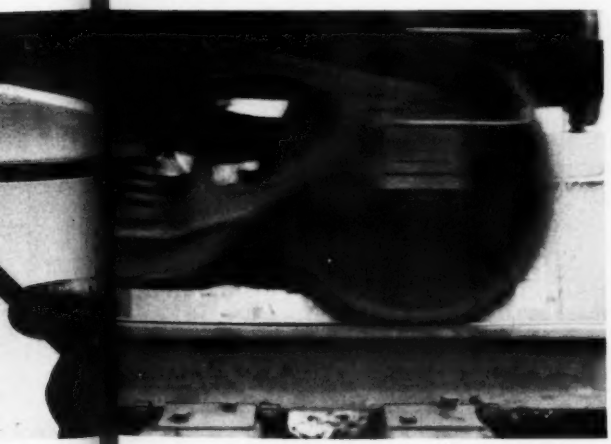
TRUE TEMPER



4 BUY REAPPLICATION. BULLDOG anchors can be reapplied again and again, or applied to worn rail . . . with no loss of holding power. That's because the original application — manually or mechanically — doesn't weaken them, and because there's extra room in the take-up slot in the clamp.

5 BUY WINTER PROTECTION. This drawing shows how frozen ballast can't force BULLDOG anchors into losing their grip. The point of the clamp offers no flat surface. The thrust of frozen ballast is split and pushed aside. BULLDOGS stay tight.

ıeyn rail anchors



nually or m
and effort
ns a straight
spring.

3 BUY "DERAIL DAMAGE INSURANCE." In event of derailment, BULLDOG anchors won't punch holes in rails. Derailments are expensive enough without chancing this cost . . . which BULLDOGS prevent.

To summarize:

You save money with BULLDOG Rail Anchors because they have more holding power. They have a sustained grip because of 2-element construction. They have a deeper tie-bearing surface. Frozen ballast won't move them. They can be easily removed and reapplied . . . even on worn rails. They're easy to ship, easy to handle, easy to apply. *And they cost no more.*

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NEWS ABOUT PEOPLE

BALTIMORE & OHIO—George J. Bleul, designing engineer at Baltimore, Md., has been promoted to assistant engineer of buildings there, succeeding **Otis G. Wilbur** whose retirement was announced in the September issue. **Henry W. Clarke,** field engineer at Baltimore, retired recently after 42 years of service. **Harry P. Rankin,** assistant engineer, has retired after 43 years of service.

BOSTON & MAINE—Robert F. Garner, assistant to chief engineer at Boston, Mass., has been promoted to valuation engineer there, succeeding **Henry L. Restall** who has retired from normal duties after 40 years of service. Mr. Restall has accepted specialized duties as a consultant.

CANADIAN NATIONAL—M. Kruger, roadmaster at Fort Frances, Ont., and **G. J. Roberts,** roadmaster at Camrose, Alta., have retired after 45 and 46 years of service, respectively.

CHESAPEAKE & OHIO—L. D. Smith has been appointed assistant engineer buildings at Detroit, Mich., succeeding **R. J. Black,** retired. **W. J. Crawford,** assistant cost engineer at Hinton, W.Va., has been transferred to Pikeville, Ky., succeeding **J. W. Cowherd** who has been promoted to assistant supervisor track at Clifton Forge, Va. Mr. Cowherd succeeds **G. P. Michael** who has been promoted to supervisor track.

Ray H. Martin, assistant cost engineer at Covington, Ky., has been promoted to assistant supervisor bridges and buildings at Peru, Ind. **J. W. Knapp, Jr.,** trainmaster at Richmond, Va., and an engineer by training and experience, has been promoted to chairman of the rules committee with headquarters at Huntington, W.Va., succeeding **H. E. Johnson,** retired.

CHICAGO & WESTERN INDIANA-BELT OF CHICAGO—A. B. Hillman, Jr., assistant chief engineer at Chicago, has been promoted to chief engineer there, succeeding **A. B. Hillman, Sr.,** who retired September 30. **W. D. Chapel,** assistant engineer, has been promoted to engineer maintenance of way.

DELAWARE & HUDSON—H. V. Borst, track supervisor at Albany, N. Y., has been transferred to Carbondale, Pa., succeeding **Walter J. Shimer** who has retired after 44 years of service. **C. Young** has been appointed assistant track supervisor at Albany.

DENVER & RIO GRANDE WESTERN—James F. Zanolio, locating engineer at Denver, Colo., retired recently after 37 years of service.

GRAND TRUNK WESTERN—A. L. Ray, assistant engineer maintenance of way at Detroit, Mich., has been promoted to engineer maintenance of way there, succeeding **R. A. Gravelle** whose death was announced in the August issue. **Bernard Post,** assistant engineer at Detroit, Mich., has been promoted to division engineer there.

GREAT NORTHERN—B. G. Anderson, district engineer at Duluth, Minn., has been promoted to assistant chief engineer at St. Paul, Minn., succeeding **H. S. Loeffler** who has retired after 44 years of service.

ILLINOIS CENTRAL—L. E. McCullough, assistant to division engineer at New Orleans, La., has been transferred to Memphis, Tenn., succeeding **James R. Miller** who has been promoted to division engineer at Jackson, Tenn. Mr. Miller succeeds **N. R. Forbes** who has been transferred to Carbondale, Ill., succeeding **C. I. Van Arsdalen** who has retired after 48 years of service. **W. N. Young,** supervisor track at Yazoo City, Miss., has retired after more than 40 years of service.

LACKAWANNA—George A. Phillips, chief engineer, with headquarters at Hoboken, N. J., has retired.

NEW YORK CENTRAL—W. W. Kerr, assistant division engineer at Columbus, Ohio, has been transferred to Chicago, succeeding **C. L. Nolan** who has retired after 46 years of service. **R. O. Beers,** supervisor of track at Sandusky, Ohio, has been promoted to district methods engineer at Cleveland.

NICKEL PLATE—Robert A. Gleason, assistant general superintendent and an engineer by training and experience, has been promoted to general superintendent, with headquarters at Bellevue, Ohio.

NORTH WESTERN—Carl E. Miller, who has been on leave due to illness, has returned to his position as roadmaster at Eau Claire, Wis. **Raymond Stotka,** acting roadmaster at Eau Claire, has returned to his former position as assistant roadmaster at St. Paul, Minn. **Oren McCulloch,** temporary assistant roadmaster at St. Paul, has returned to his former position as gang foreman there.

ROCK ISLAND—William H. Beals, assistant construction engineer at Blue Island, Ill., has been promoted to assistant division engineer at El Reno, Okla. **T. J. Burian,** track supervisor at Fairbury, Neb., has been appointed acting roadmaster at Eldon, Iowa, succeeding **C. S. Grimm** who has been transferred to Iowa City, Iowa. Mr. Grimm succeeds **J. C. McConnell** who has been appointed acting general roadmaster at Kansas City, Kan., succeeding **R. P. Scott** who has been granted a leave of absence.

SANTA FE—Charles A. Gates, office engineer at Argentine, Kan., has been promoted to bridge engineer, Eastern Lines, at Topeka, Kan. **A. B. Kelly,** assistant engineer at Galveston, Tex., retired recently after more than 40 years of service.

SOUTHERN—The following appointment as division engineer at the locations shown have occurred recently: **Paul A. Perkins,** trainmaster at Alexandria, Va., to Atlanta, Ga.; **Jack E. Greene,** trainmaster at Winston-Salem, N. C., to Alexandria, Va.; **Hubert L. Rose,** assistant division engineer at Greenville, S. C., to Winston-Salem.

Obituary

M. G. Counter, assistant engineer track on the Burlington at Galesburg, Ill., died suddenly on September 9 at St. Joseph, Mo., at the age of 47.

Edward Wise, Jr., 65, engineer maintenance of way of the Louisville & Nashville at Louisville, Ky., died suddenly on August 20.

Biographical Briefs

Fred E. Austerman, 57, who was recently promoted to chief engineer of the Chicago Union Station at Chicago (*RT&S*, Aug., p. 10), was born at Milwaukee, Wis., and received his higher education at Milwaukee State College and the University of Wisconsin. Mr. Austerman entered railway service with the Milwaukee Road in 1918, serving in both the signal and mechanical departments. In 1926 he was appointed rodman in the district engineer's office at Milwaukee, being later advanced to instrumentman. He was promoted to assistant engineer at Chicago in 1929. Mr. Austerman was appointed assistant chief engineer of the Chicago Union Station in 1949, the position he held at the time of his recent promotion.

John T. Evans, 42, who was recently promoted to regional engineer on the Pennsylvania at Indianapolis, Ind. (*RT&S*, Aug., p. 10), was born at Scranton, Pa., and graduated from Lehigh University in 1939 with a Bachelor of Science degree in civil engineering. Mr. Evans entered the service of the PRR in 1940 as an engineering apprentice. He was promoted to assistant supervisor track at York, Pa., in February 1942, being transferred to New Brunswick, N.J., in November of that year. Two years later he was advanced to supervisor track at Salisbury, Md., subsequently also serving in this capacity at Cincinnati, Ohio, and Trenton, N.J. Mr. Evans was promoted to assistant division engineer at New York in 1952, division engineer at Cape Charles, Va., in April 1955 and district engineer at Canton, Ohio, seven months later. He was

(*Continued on page 58*)

F. E. Austerman
CUS

John T. Evans
PRR

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UREABOR can prove to be your most practical way of keeping any area weed-free! It offers all the features you want in a weed killer... convenience, safety, economy, and lasting effectiveness. With this granular dust-free material, one easy application—dry—at low rates of 1 to 2 lbs. per 100 sq. ft. gives you full season control.

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UREABOR can protect your timber structures, yards, signals, and buildings from fire-hazardous weeds easier and cheaper than any other way we know. Write for more information.

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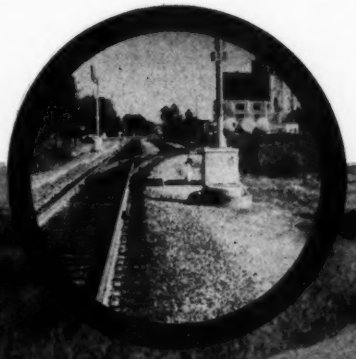

Control of vegetation for a full year in areas such as this can now be accomplished for as little as 30¢ per 100 sq. ft.

Manpower for bigger jobs

D. J. Russell, president of the Southern Pacific, made some significant statements in a speech last month before the Roadmasters' and B&B conventions.

"I can tell you," he said, "that one of the most pressing problems of our industry today is to find able candidates to step into higher level positions as they become open. We simply don't have nearly enough of the kind of men who have acquired the breadth and judgment and the flexibility and foresight required, ready to move on up the line."

The suggestion seems in order that the average M/W supervisor today is getting precisely the kind of training required to produce the qualities outlined by Mr. Russell. At least he is being exposed to that sort of training, and it's up to him to take advantage of it.

Consider first the quality of flexibility. More than ever before the M/W supervisor must, if he is to be successful, maintain a flexible attitude to keep up with the changes taking place in his field.

When it comes to foresight, this same supervisor must be forever planning ahead, trying to anticipate the requirements of his territory and to provide for them.

Furthermore, as Mr. Russell pointed out, "the amazing new machines demand of the supervisor a new degree of administrative skill in planning and scheduling the work." The new era, he added, also requires of the supervisor a "new degree of leadership and a new depth of human understanding."

Perhaps M/W supervisors have, as Mr. Russell said, "tended too much to become specialists." Even so, it's a good bet that most roads will find, among the men moving up in their M/W departments, a goodly supply of highly trained manpower qualified to assume higher positions.

The need for action in dealing with today's problems

The man's eyes were sparkling as he came into the office. A railroad ma but not an engineer, he had just come from an inspection of the many produc on display at Chicago's Coliseum during the Roadmasters' and Bridge & Buil ing conventions.

It had been some years since he had seen one of these exhibits and he wa amazed to see the developments that had transpired in the meantime, and e pressed particular surprise over the variety and complexity of the many sp cialized machines now available for maintenance of way and structures wor He wondered how it was possible for a maintenance man to make up his mi what machines to choose for his particular needs.

That's a good question. It's one that's bothering many a maintenan officer right now. One of his biggest problems is to decide which of the ava able types of machines to specify for a particular operation. Not only does h have to evaluate the different machines now available, but he can't ignore t fact that technological progress may soon produce improved types.

A factor that makes for caution is the trend these days to mechanize on systemwide basis as fast as the money can be obtained. A top maintenan officer, therefore, feels he has to be pretty sure of his ground before committi his road to a large expenditure for equipment.

The problem is illustrated by a recent conversation with a high maintenan officer of a large road. The decision had been made to mechanize the brid and building forces throughout the system. He and his associates had gott as far as deciding on the number and types of gangs that they would have each major territory—and then they came to inspect the products exhibit Chicago. Until then this officer had been confident that the necessary decisi could be made and the equipment placed in the hands of the bridge and build forces in the near future. But an inspection of the exhibits changed his mi Because of the variety of machines available he felt that more time would b needed to make decisions and that many months would transpire before t mechanization program could be completed.

Machines are not the only area in which decisions are more difficult the days. The desperate need for economy in maintenance has stimulated the d velopment of many products and materials designed to reduce costs. These a offered either because they are less costly initially or because they produ economies through greater service life. Very often their use would entail break with past practice or tradition, thereby further complicating the matt of making decisions.

It is important to remember, when dealing with these complex problem that no one is endowed with the quality of infallibility. For a maintenan man to expect this quality of himself is expecting too much. The most he c do is to evaluate a situation to the best of his ability, and then make a decisi without undue delay. The important thing is to take action. A carefully chart course of action may not be 100 per cent right, but it is almost certain to b preferable to delayed action or no action at all.

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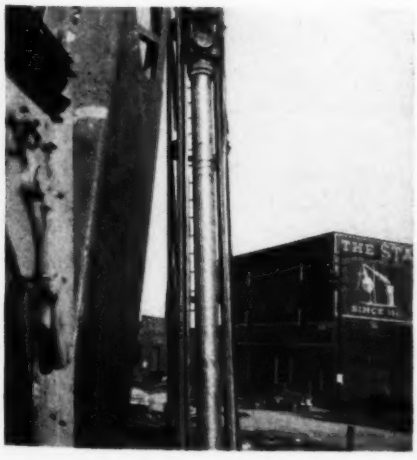
Better Bridges Are Built With Armco Pipe Piling

You can inspect Armco Steel Pipe Piling after it's driven—check it easily and completely for alignment and watertightness.

You can specify exactly the piling you need from 132 different diameter-wall thickness combinations. And you can specify exact lengths—up to 93 feet—to simplify your field splicing requirements. Write for complete data.



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CP-612-RLP Impact Wrench backs out frozen, rusted bolts when replacing Frog and Switch parts, and speeds up the work of reassembly. Available with built-in Torque Control and Spline Drive Shank.

CP Scaling equipment speeds up removal of rust, paint and scale on structural steel maintenance...chippers, scalers, grinders, wire brush machines.

CP-610 Impact Wrench is tops for High Strength Bolting of structural steel, and for maintenance of equipment. Available with built-in Torque Control and Spline Drive Shank.

you saw these CP power tools at the A.T.S.S. Show...

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WHY NOT PUT THEM TO WORK FOR YOU?

When you dropped in at CP Booth 84 at the Coliseum you saw air tools that have earned their railroading reputation by replacing hard physical labor with tireless performance and speed. Now's the time to put this CP Equipment to work for you in bridge building, and maintenance-of-way jobs.

Chicago Pneumatic

8 East 44th Street, New York 17, N. Y.

PORTABLE AIR COMPRESSORS • IMPACT WRENCHES • SCALERS • PUMPS
MAINTENANCE-OF-WAY EQUIPMENT • ROCK DRILLS • CHIPPERS

These CP Air Tools also are widely used on track and structures:

Air-Operated Grinders	Rock Drills
Chipping Hammers	Spike Drivers
Compressors	Sump Pumps
Heavy-Duty Air Drills	Tamping Equipment
Riveting Hammers and Equipment	Flange-wheel Mounted Compressors

Wire Brush Machines

Railway TRACK and STRUCTURES

NEWS NOTES . . .

. . . a résumé of current events throughout the railroad world

Over 400 pages of testimony were filed by the New York State Railroad Association in connection with an investigation of the full-crew laws of the state by the Public Service Commission. The NYSRA, representing 11 Class I railroads in the state, declared that the "excess crew" law caused a $15 million drain on the financial resources of the state's railroads.

Railroad employment in mid-August stood at 819,626, according to the ICC's Bureau of Transport Economics & Statistics. This figure is 2.91 per cent below that for August 1958 and 3.14 per cent below July 1959.

A 25-cent per hour increase in wages and a 7-cent per hour increase in health and welfare benefits have been asked by the railroad non-operating unions. This is in addition to the increases brought about by the cost-of-living index, which already aggregate 13 cents per hour and which will increase another two cents by an adjustment on Nov. 1. These demands, served September 1, complete the non-op's 1959 "package" which already contained demands, served May 29, for longer paid vacations and two more paid holidays per year.

The railroads' reaction to the pay-increase demands of the non-operating unions was to ask these unions to take pay reductions of 15 cents an hour. The carriers had previously proposed a similar cut for the operating unions. They said the cut is being proposed "to bring the workers' wages in line with straight-time hourly earnings of production workers in all industries."

The views of both the railroads and the unions in the featherbedding dispute have now been presented to the White House. The AAR's letter of August 17 asking President Eisenhower to establish a presidential commission to review work rules in the railroad industry met opposition from the five operating brotherhoods. They urged the President to continue "your widely chosen general policy of non-government intervention into labor disputes."

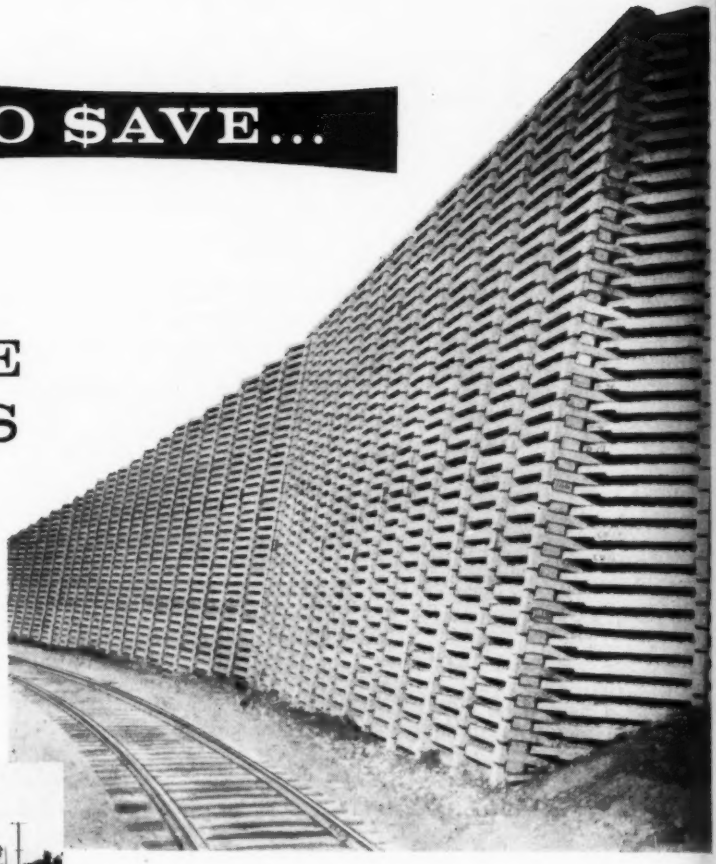
Soon it won't be necessary to own a computer to have computer service. These machines will be available to railroads in 1960 on a rental by-the-hour basis. IBM 7070 computers can be rented (for "under $300 an hour") at "Datacenters" in major cities for as little as 15 hours of computing time per month.

The Transportation Act of 1958 has not brought the expected or needed aid to railroads, the Senate was told by Senator Styles Bridges (R.,N.H.). He felt that forthcoming investigations in Congress and the Commerce Department should be sufficiently broad to lead to comprehensive legislation for the whole transportation field. He is convinced "we should permit the railroads and other carriers to operate as free enterprises and to exercise the freedom of action and freedom of decision found in other industries. Unless we do, we are either going to be compelled to spend untold millions of dollars to support them or face government ownership."

3 WAYS TO $AVE...

with

PRECAST CONCRETE PRODUCTS



CRIBBING

Concrete crib walls, because of their economy and adaptability, are the permanent answer to most retaining wall problems. Architecturally pleasing too.

PRESTRESSED RAILROAD BRIDGES

Precast maintenance-free Amdek bridge beams are made under factory controlled conditions, delivered on schedule, erected quickly with minimum traffic tie-up.

CULVERT PIPE

Concrete culvert pipe is permanent. Available in the shape, size and strength required. Has superior hydraulic properties.

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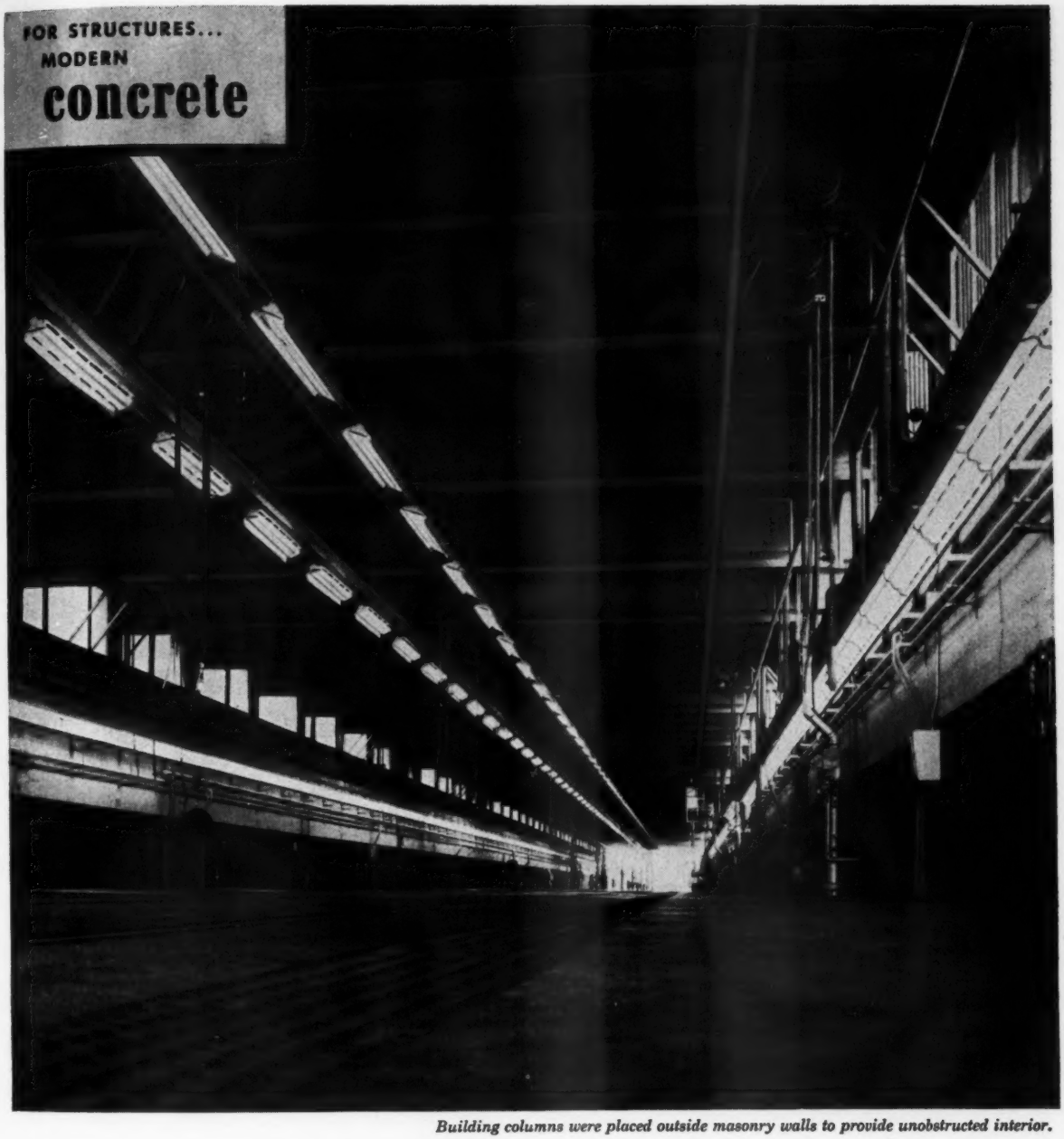
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

FOR STRUCTURES...
MODERN
concrete



Building columns were placed outside masonry walls to provide unobstructed interior.

B & M's new Budd car servicing shop:

Low maintenance cost guaranteed...
it's built top to bottom with modern concrete!

The job called for maintaining rolling stock, not buildings. That's why the Boston & Maine Railroad chose concrete all the way—floor, walls, roof—for servicing their RDC fleet. It's as maintenance free as you can make a building. Fire resistant, too.

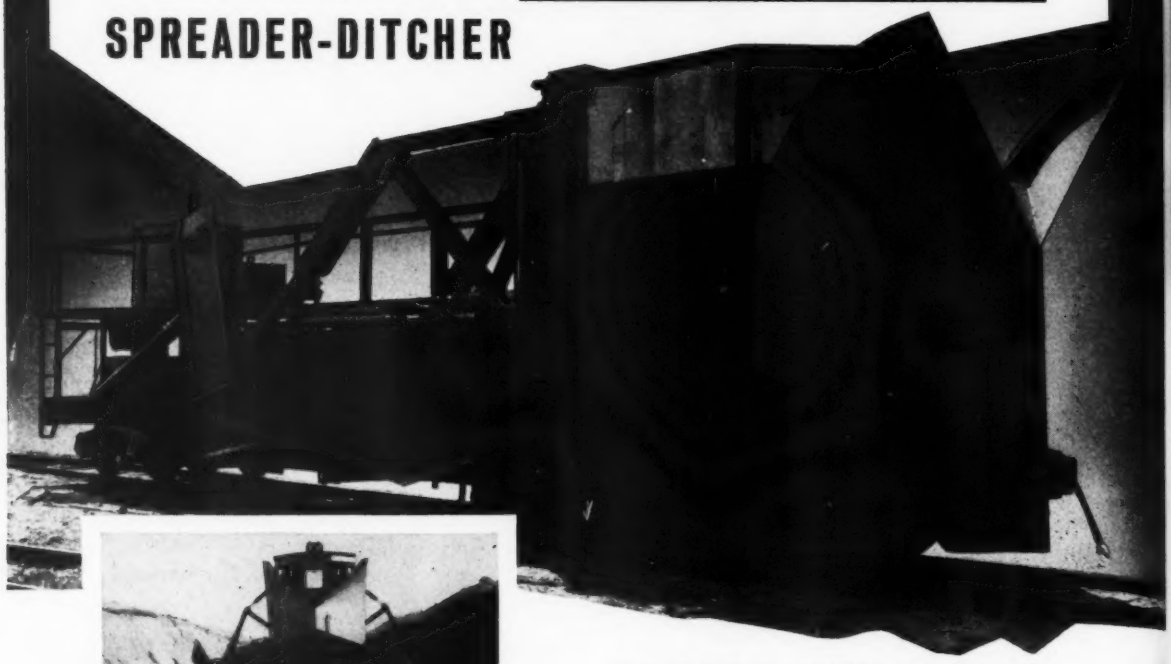
The prestressed concrete roof girders were chosen for their high load-bearing strength. They support the monorail-mounted sand hoppers and a 10-ton sand storage tank, as well as the normal roof load.

The use of prestressed concrete increases daily on railways—not only for buildings but for towers, bridges, structures of all kinds. With prestressed concrete, count on minimum cost and quick erection.

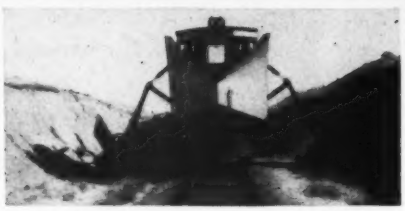
PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Announcing the NEW
JORDAN HYDRAULIC
SPREADER-DITCHER



Jordan Hydraulic Spreader-Ditcher with wings raised to provide maximum clearance for travel to point of use.



Jordan Hydraulic Ditcher-Spreader in operation, with wings lowered.

BETTER PERFORMANCE—New hydraulic control system, combining the achievements of Jordan research with more than sixty years' experience in manufacturing railway equipment, provides unequalled performance. Hydraulic power assures: smooth, positive operation; accurate positioning; faster operation; more work-capacity; safety.

INCREASED VERSATILITY — The Jordan Hydraulic Spreader-Ditcher has year-around usefulness for all types of right-of-way improvement and maintenance operations, including spreading; ditching; building up embankments; ballasting; snow plowing; and moving industrial material such as steel mill slag on dump lines.

COSTS LESS–The Jordan Hydraulic Spreader-Ditcher costs *less* than other equipment designed for the same purpose because it accomplishes *more* in a given period of *time*. Sturdy construction assures continuous, uninterrupted work output. Wide versatility makes possible substantial savings in time and man-power in all types of maintenance operations the year 'round.

Write or call today for free brochure describing the many unique, exclusive features of the Jordan Hydraulic Spreader-Ditcher. We also will be pleased to arrange for a demonstration at your convenience.

O. F. JORDAN COMPANY

WALTER J. RILEY, *Chairman of the Board*

EAST CHICAGO, INDIANA

JORDAN SPREADER

"DOES THE WORK OF AN ARMY OF MEN"

STRENGTH DURABILITY ECONOMY

THE IMPROVED GAUTIER RAIL ANCHOR

Here is one of the heaviest, and most rugged, rail anchors on the market. It is made from alloy spring steel . . .

it is tough, durable, and sure-gripping with plenty of take-up so that it can be used again and again . . .

it is applied with a maul or spike maul and it can't be overdriven. For Strength, Durability, and Economy . . .

specify and insist on the Improved Gautier Rail Anchor

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MID-WEST FORGING & MANUFACTURING COMPANY

Distributors: D. V. MAHER, Cleveland, Ohio; WILLIAM ALLEN, Denver, Colorado; JOHN O'BRIEN, St. Paul. Minnesota; W. T. RICHARDS, San Francisco, California; G. C. HUNT & CO., Atlanta, Georgia

PROGRESS REPORT

SPENO

Here are the up-to-date facts on the SPENO Ballast Cleaning and the SPENO Rail Grinding Services.

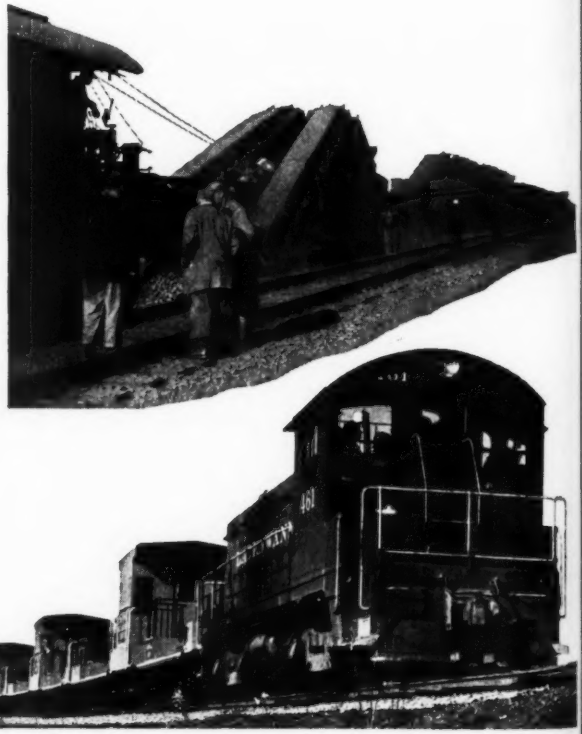
BALLAST CLEANING

SPENO Engineering and Research has developed a superior screening arrangement so that we are now using an improved Ballast Cleaner with greater efficiency.

RAIL GRINDING

Our Rail Grinding Service has been so well received we are now building a *THIRD* Rail Grinding Train to take care of the increased demand.

SPENO is constantly developing means for better service to make sure that the Railroads receive everything they pay for — and more



Just Ask the Railroads That have used us!

FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.

Clark Street
East Syracuse, N. Y.

306 North Cayuga St.
Ithaca, N. Y.

NOW... SAVE UP TO 13,000 SPIKES PER MILE

... reduce tie splitting from excessive spiking

GAGE LOCK SPIKES

Two Gage Lock Spikes to a plate do a better holding job than 4 cut spikes on tangents and light curves. Fewer spikes are driven — causing less tie damage and permitting a saving of nearly 13,000 spikes per mile. The Gage Lock Spike is a plate fastening as well as a rail spike. It has an indented throat, offset at the tie plate surface. Result: thrust and wear are avoided from the edge of the rail base.

TIE PLATE LOCK SPIKES

Both the Tie Plate Lock Spike and the Gage Lock Spike hold the rail to gage and avoid plate cutting. When driven to refusal, the spread shank is compressed and binds against the walls of the hole with spring pressure. Play is eliminated — plates are held against movement — rail is held to gage and plate cutting is avoided.

RAIL LOCK SPIKES

Rail Lock Spikes offer the same design as Gage Lock Spikes, but are not offset at the plate surface. The throat protrudes 1/16"—resultant pressure binds the spike against the rail base edge. Play is eliminated between the tie plate shoulders — the rail is held to a true gage.

Forward-looking management can extend the cycle of track structure by using Lock Spikes. One regaging operation costs more than the initial cost of installing Lock Spikes. Specify spikes having a low annual cost—Specify Lock Spikes.

GAGE LOCK SPIKE

TIE PLATE LOCK SPIKE

BERNUTH, LEMBCKE CO., INC.

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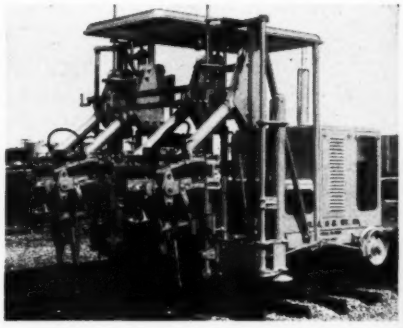
THE 1960 JACKSON TRACK MAINTAINER: Faster and better than its predecessors though those machines won an endorsement by leading track men such as no other in this category has ever enjoyed . . . purchase and use on nearly all the major systems in America. For the dual purpose of putting up and maintaining track of finest, longest-lasting quality at minimum cost, it is demonstrably the finest money will buy.

THE NEW JACKSON JACK-SPOT TAMPER: A product of intensive research, development and testing *with all operations electrically controlled and push-button operated.* It's an exceedingly fast Jack Tamper, adapted to existing track surfacing equipment; a mighty powerful, efficient spot tamper and ideal as an all-around production tamper for those requiring an all-purpose jacking-and-tamping machine.



THE NEW JACKSON MONORAIL: Another versatile, highly efficient tamper. Excellent for spotting and smoothing, secondary programs and all yard track maintenance. Hydraulically actuated and controlled. Equipped for quick transfer to opposite rail, quick take-off and towing behind truck.

Get the facts concerning these machines and you will recommend them with assurance.

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

Convention report . . .

Review trends in track, B&B work

Roadmasters' and Bridge & Building meetings at Chicago last month, sparked by record-tying exhibit at Coliseum, attracted a large attendance. Highlights of the joint opening session and separate sessions, along with many photographs of those present, are given on this and following pages. Railroad president tells groups that M/W men tend to specialize too much.

REGISTRATION for the two conventions came to a total of 1724, including guests. It was much higher than last year when there was no exhibit.

Great technological progress but "too much" specialization in M/W

The men who have the responsibility of maintaining the fixed properties of the nation's railroads have made great progress in reducing the cost of such work.

But they "have tended too much to become specialists," and there is a need for these men to "broaden themselves to see their work not as a final objective in itself, but in the broad perspective of where the railroads are going and how they can best improve their position in this era of rapid change."

These two points were made by the two principal speakers at the joint opening session of the Roadmasters' and Bridge & Building conventions on September 14.

The speaker that told of progress in reducing costs was C. J. Henry, chief engineer of the Pennsylvania, whose subject was "How to Cope with Railroad Maintenance Problems." D. J. Russell, president of the Southern Pacific, speaking on "The Supervisor's Role in the Future of Railroads," was the speaker who advised the broadening procedure for M/W supervisors.

Mr. Henry's approach to his subject was to describe the methods being used by the PRR to reduce M/W costs. The procedure, he said, has been to experiment with mechanization on a local basis to determine the possible savings. As the first step a few extra gangs engaged in track work were equipped with modern machines representing an investment per gang of $200,000. "The results," he said, "were satisfactory. For example, in one district in 1952, 72 miles of track were worked with 975,000 man-hours using the old, conventional methods. In 1957 the same territory was worked by mechanized equipment using 420,000 man-hours, or a reduction in

Featured speakers at the joint opening session . . .

D. J. RUSSELL, president, Southern Pacific, said, M/W supervisors "have tended too much to become specialists."

C. J. HENRY, chief engineer, Pennsylvania, described the many steps taken by his road to promote M/W efficiency.

FRANK R. WOOLFORD, chief engineer, Western Pacific, and president of the AREA, brought greetings from that association.

STOPPED IN THE AISLE at the Coliseum were these three men from the Milwaukee Road—H. C. Pottsmith, supt. work equip., C. L. Boland, gen. rdm., and Frank Wilson, asst. engr.

TRANSPORTATION of men was the subject for discussion when H. B. Orr, asst. ch. engr., and T. F. Burris, ch. engr., both C&O, stopped to talk with H. Gumprecht, Gandy Wagon Company.

WHAT'S NEW? S. H. Barlow, sys. engr. trk., and H. R. Peterson, ch. engr. of NP, found out while visiting exhibition hall.

CLINCHFIELD'S J. M. Salmon, Jr., ch. engr., and G. W. Hupp, supt. wld. & wk. equip., watch some surfacing units in action.

Products of 113 supply companies were on view at the Coliseum. The photos on this page show a few of the many railway officers who were seen inspecting the displays on September 14, the opening day. The exhibition occupied all available space in the huge building.

man-hours of about 56 per cent. The quality of the work was better, for each and every tie was given the same uniform tamping."

Based on these trials, explained Mr. Henry, the road decided to adopt the cycle maintenance principle and to expand it to system proportions as fast as money for machines and equipment became available. "This means tie renewals are made on a six-year cycle and intermediate surface lifts made every two to three years as traffic conditions may require." Each district or operating division, he said, is now equipped with a heavy maintenance gang, two surface lift gangs, three spot-surfacing gangs, two work-train gangs, two road-crossing gangs, and three "skirmish" gangs.

The new system, said Mr. Henry, takes the place of the "time-honored method of performing track work with section and extra gangs."

"The bridge and building department has also been the subject of extensive study, and we now have one region completely mechanized," stated the speaker. This department, he explained, will be revamped systemwide as fast as equipment can be financed.

Mr. Russell acknowledged the progress made in mechanization of M/W work, but went on to say that the "new era in maintenance of way technological practices must be matched with progress in supervisory practices." He advised supervisors to maintain an attitude of constant alertness, and "to develop the habit of looking at every detail of the work, not just from the viewpoint of whether it meets the established standards, but with these more important and ever-present questions in your mind: Why must the job be done this particular way, and is there a better way to do it?"

"The amazing new machines," said Mr. Russell, "demand of the supervisor a new degree of administrative skill in planning and scheduling the work." Because supervisors have the problem of developing operators of new and complicated equipment, "this new era requires a new degree of leadership and a new depth of human understanding." He feels that from this group "will come the competent supervisors of the future," and that encouraging them to express ideas "is one of your main opportunities to develop these people."

At this point Mr. Russell made his statement about over-specialization among M/W supervisors. His "impression is that most supervisors, competent as they may be in the job immediately at hand, have not been sufficiently inclined to expand their interest and understanding into . . . other fields." He believes this is "just about as true for the college-trained engineer as it is for those who have developed themselves without college training. All too many college engineers tend to concentrate on engineering matters."

Mr. Russell then described how his road has dealt with this problem by an educational program under which "some 75 to 80 of our officers, supervisors and prospective supervisors are being selected each year for enrollment in various colleges and universities." Started in 1950 this program was substantially enlarged in 1956, "reaching down through middle management and supervisory levels, and even including some of our carefully selected younger rank-and-file people who had shown unusual ability."

"In this entire program," declared Mr. Russell, "except for the technical engineering courses, the major emphasis is on gaining skill in decision making in the vast range of management problems that call for breadth of knowledge and understanding far beyond the limits of the slide rule or the exact science of calculus."

He stated emphatically that "one of the most pressing problems of our industry today is to find able candidates to step into higher positions as they become open."

Do the advantages of making tie renewals by the cycle method outweigh

TWO WESTERNERS, G. L. Morrison, v.p. & gen. mgr., NWP, and R. G. Simmons, gen. rdm., CMSP&P, have a serious talk.

BANQUET TICKETS. H. D. Curie, mast. carp., B&O, gets his from Herbert Clark, Jr., (Armco). Others at table are (left) A. J. Reading (Nalco Chemical Co.) and F. W. Evinger (Lehon Co.). Banquet was sponsored by Association of Track & Struct. Suppliers.

WITTICISM by F. R. Woolford, ch. engr., WP, brings smiles to faces of G. H. Echols, ch. engr., Sou., and N. D. Howard, exec. secy., AREA, during a pause between convention sessions.

A CHUCKLE is provided by R. H. Carpenter (right), engr. m. of w., MP, when V. C. Hanna, ch. engr., TRRAofStL, C. J. Code, asst. ch. engr. staff, PRR, and W. H. Hobbs, ch. engr., MP, get together.

Roadmasters discuss tie renewals, costs, equipment leasing, other subjects

FINE CONDITION of the Roadmasters' Association was reported to the convention by its president, C. E. Neal, div. engr., NWP.

the disadvantages? This question was discussed by one of the six subject committees reporting during the Roadmasters' sessions.

The committee recommended that programs for tie-renewal gangs be set up where the renewals run from 300 to 600 ties per mile. Where the renewals run less, the committee was of the opinion that it was not economical to disturb the track. It also reported that renewing more than 600 ties per mile tended to increase the cost per tie inserted.

It recommended that the tie-renewal program be coordinated with surfacing cycles on primary main tracks, either as a separate unit ahead of the surfacing or as part of the surfacing organization. It was the conclusion of the committee that cycle tie renewals were more economical than the old method of spot insertions and that the quality of the work was somewhat better.

Another matter which has been the subject of heated discussions for a number of years is branch-line maintenance. Some track supervisors, particularly those having to care for branch lines, have felt that the importance of maintaining such lines has not been fully recognized.

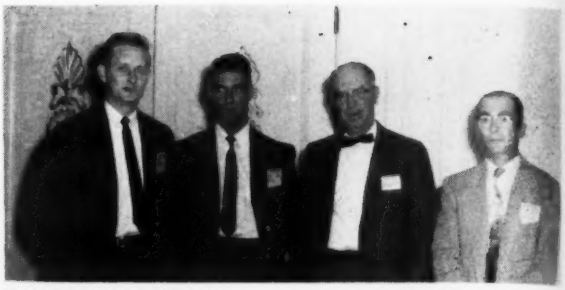
This subject was met head-on by another work committee. In its report it was pointed out that railroad maintenance policy for branch lines is directly related to the volume of traffic originating on, or moving over, such lines. The committee agreed that some main-track practices should also be applied to branch lines. For instance, cycle maintenance with mechanized equipment is justified and frequently presents more economy on branch lines because of fewer work interruptions and longer periods between cycles. Other main-track maintenance items such as drainage and bank restoration, the backsloping of cuts to prevent filling with drifted snow, and the maintenance of roadway signs also are applicable to branch lines, stated the committee.

The committee was of the opinion that the use of all available work equipment should be set up on a cycle basis to handle the heavy-work programs which are too expensive to handle with small track gangs. However, the committee was in favor of maintaining branch lines only to the point where trains can be operated safely and efficiently.

Since more and more railroads are delving into the costs of all phases of track maintenance, track supervisors want to know how such studies are made and how they are used. This was explained in another report.

These studies, according to the committee, are used for establishing normal work units, fixing work budgets, justifying new equipment, preparing estimates, improving work methods, and, as many had suspected, for rating supervisors and gangs. Because the daily time distribution sheets form the basis for cost studies, the committee stressed the importance of showing the correct information on them.

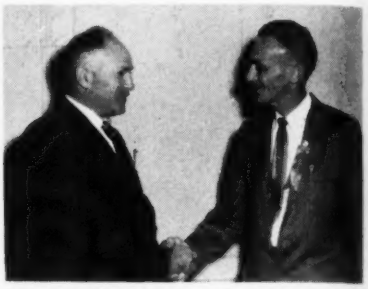
PAST PRESIDENTS of Roadmasters' Assn. E. L. Anderson, ch. engr. (ret), Frisco, W. M. S. Dunn, staff engr., C&O, and H. W. Kellogg, asst. ch. engr., C&O, pose with Director F. L.Etchison, ch. engr., WM.



BANGOR & AROOSTOOK was well represented by these four early arrivals: P. H. Swales, ch. engr., G. L. Swett, prin. asst. engr., R. E. Trickey, supt. B&B, and L. J. McMannus, rdm.

CORDIAL INVITATION is extended by A. J. Reading, pres., Assn. of Track & Structure Suppliers, to visit Coliseum.

SUPPLIER Bernard J. Yelin, v. p., Int'l Car Div., Morrison International, talks to A. B. Hillman, Jr., ch. engr., C&WI.



CONGRATULATIONS! C. E. Neal, outgoing president of Roadmasters' Assn., shakes hands with S. E. Tracy, incoming president.

It also pointed out that the profit margin of a company is favorably affected by increasing the output of a machine or increasing the efficiency of production. Conversely, it is adversely affected by the reverse of these situations. Hence, the monthly cost figures can warn of abnormal production situations so that corrective measures may be taken. It was the opinion of this committee that cost studies are of real importance to the chief engineers and also can be helpful to the supervisors.

Some roads buy their work equipment. Others lease it. Which is better? To answer this question, a committee made a study of the subject. In its report the committee stated that four general agreements for acquiring work equipment under lease are in effect. These are: Straight lease, lease with rental option, lease with purchase clause, and trial lease. Eleven advantages and nine disadvantages of leasing were cited.

To help in reaching a decision on whether to purchase or lease equipment, the report presented five considerations. These are: Percentage of time actually used out of the available time, continual or seasonal use of a machine, method of authorization, availability of equipment, and financial considerations including the tax angle.

"There is not one single item of the track structure that pays greater dividends than the rail anchor when properly installed and maintained," according to a committee that made a study of the importance of rail anchoring. On the other hand, the committee reported, the undesirable results of improper or insufficient anchorage are manifold.

Modern methods of constructing new track comprised the subject of a report by another committee. Track laying by prefabricated track panels and by conventional methods was discussed and several recent projects involving each method were described.

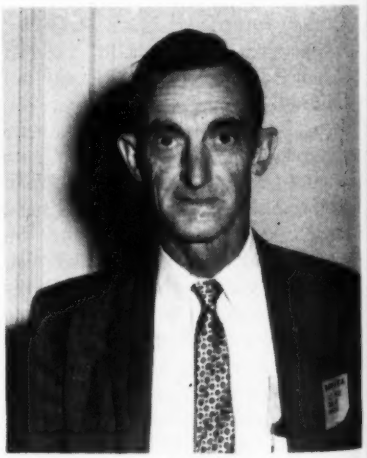
The three standing committees also submitted reports to the convention. One described many of the new machines and devices which are now available for track work. Another dealt with the subject of ballast. The third covered the prevention of erosion and restoration of embankments.

NEW OFFICERS—

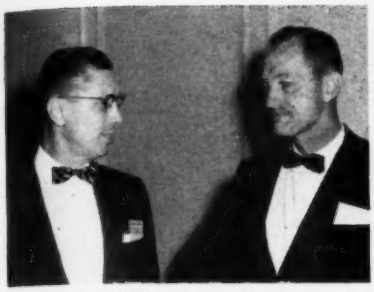
Roadmasters' Association

In the election of officers in the Roadmasters' Association, S. E. Tracy, superintendent of work equipment, CB&Q, was advanced from first vice president to president; E. F. Snyder, assistant to chief engineer, Illinois Central, was moved up from second vice president to first vice president; and L. C. Blanchard, roadmaster, Milwaukee Road, and a director of the association, was elected second vice president. R. G. Simmons, general roadmaster of the Milwaukee Road, was re-elected treasurer.

Two new directors were elected to serve four-year terms. They are J. H. Brown, assistant chief engineer, St. Louis-San Francisco, and G. W. Neal, superintendent, Chattahoochee Valley. R. H. Carpenter, engineer maintenance of way, Missouri Pacific, was re-elected a director for one year to fill the unexpired term of V. C. Hanna, chief engineer, Terminal Railroad Association of St. Louis, who resigned.



S. E. Tracy
President-elect
Roadmaster's Association



FROM THE SOUTH. E. M. Hastings, wire crossing engr., C&O, and R. E. Tew, asst. to ch. engr., SAL, talk about situation.

RAPT ATTENTION was shown by members of both the Roadmasters' and Bridge & Building associations while one of the main speakers, D. J. Russell, pres., SP, was addressing the joint session, Tuesday morning, on the Supervisor's Role in the Future of Railroads.

RESEARCH MATTERS? Randon Ferguson, resch. staff, AAR, and C. J. Code asst. ch. engr. staff, PRR, listen while W. J. Cruse, engr. m. of w., GN, describes some work he is doing.

HUMOR OF THE SITUATION is not lost to R. R. Gunderson, engr. m. of w., WM, W. H. Huffman, asst. ch. engr.—constr., C&NW, and T. M. von Sprecken, asst. to ch. engr., Sou., when they get together.

Equipment repairs, fire protection, new materials, contracting on B&B agenda

A question that has concerned many railroad men is: How many pieces of work equipment should a field mechanic care for?

A committee reporting during the Bridge & Building Sessions was of the opinion that a mechanic should inspect, service and make minor repairs to about 30 units a week. With more machines to service, it felt that the result would be lost efficiency or breakdowns of the machinery.

This yardstick of 30 units, however, was on the premise that machine operators would keep the machines' fuel tanks and radiators filled, check the lube oil, grease and, in the case of some machines, keep the blades sharpened.

The chief cause of the failure of work equipment, the committee reported, is insufficient knowledge on the part of the operators and supervisors and lack of care. Another cause is making the machine do heavier work than that for which it was designed. Very few breakdowns occur because of parts failure or poor workmanship on the part of the manufacturers. Most breakdowns, it continued, and failures can be prevented by correct maintenance procedure.

Training and instruction of all personnel connected with work equipment is a great deterrent to untimely failures, the committee stated. Operators must be told what to do and how to do it. Supervisors must check to see that they are doing it properly.

Another committee reported on the recent developments in fire-protection methods. The annual average loss of railroad property from fire over the past 35 years was reported to be $8 million. Measures advocated by this committee for the protection of existing structures, outmoded by present-day standards of fireproofing buildings, include the use of fire-protective coatings and fire-protection equipment, and the adoption of a procedure for fire inspection and good housekeeping habits.

This committee deplored the fact that, although many fire-retardant materials are available for the protection of bridges and buildings, the railroads have been slow to accept and use these materials. However, some roads have made progress in this direction, it continued, and an increase in protection work, along with continued research and the development of improved methods and retardants, can be expected.

THINGS ARE LOOKING UP for the Bridge & Building Assn., according to its president, M. H. Dick, editor, RT&S.

In discussing new building materials, another committee reported on the increased use of precast, prestressed concrete. Such material is used principally for roof slabs and flooring. It was pointed out that the increased capacities of motorized erection equipment have made larger, heavier elements feasible, resulting in savings over the jobsite concrete construction method.

One of the most revolutionary developments in bridge and building materials since World War II was reported to be in paints. This applied particularly to latex waterbase paint, which has a low toxicity, can be applied with a brush or roller, and is

SPECIAL FEATURE of the B&B meeting was a discussion of B&B maintenance on the Santa Fe led by C. H. Sandberg, br. engr., with assistance of W. R. Wilson, F. E. Schneider and W. R. Hyma.

SECRETARY'S TABLE was busy during convention as current secretary, Mrs. R. Weggeberg, and former Secretary, Miss E. LaChance, accept dues. Here, W. E. Meredith, supvr. str., PRR, pays up.

DURING THE RUSH, J. M. Lowry, ch. engr., Cottenbelt, finds time to exchange pleasantries with F. E. Austerman, ch. engr., CUS.

OPENING SESSION found the meeting room packed to capacity. Here, the members listen while C. J. Henry, ch. engr., PRR, with the assistance of slides, delivers an address on How to Cope with Railroad Maintenance Problems. Later, the associations met separately.

generally dry to the touch in 30 min.

The problems of maintaining railroad buildings were said by another committee to be no more special or complicated than those found on a smaller scale by the ordinary home owner. "This fellow, if he is smart," the committee stated, "subscribes to home-owner periodicals and reads them. The B&B man has a wealth of good maintenance literature at his finger tips and can get more for the asking. Keep abreast of the ever-changing maintenance methods and materials through good reading habits."

The contracting of work was given consideration by another committee. It outlined the advantages of doing work by contract and the disadvantages. In its conclusion, the committee warned of the inadvisability of working railroad employees with contractors' forces, except in the areas of inspection and supervision.

It also noted that, since working agreements differ with each carrier, the determination of the relative economy of contracting work or performing it with company forces is a matter for each railway. Except for those jobs requiring special skills, equipment and materials, the committee felt that any railroad that maintains an adequate supervisory staff and experienced forces can perform all of its B&B maintenance work, as well as many improvement projects, with equal or greater economy than such work could be performed under contract.

It was reported by another committee that rubber-tired trucks were among the first equipment acquired by B&B gangs. Many of these have been equipped with flanged wheels to permit both rail and highway use. The smaller and common-sized trucks, ranging from one-half to two tons in capacity, are used by traveling carpenters, water-service crews, paint gangs, general-purpose gangs and some specialty gangs.

Another railway - highway unit which was reported to increase gang output, was the mobile-type crane. When equipped with pile-driver leads, mobile cranes can make efficient use of the short periods of time between trains. Such equipment was also said to be particularly useful for wharf and building work.

NEW OFFICERS—

Bridge & Building Association

In the election of officers in the Bridge & Building Association, B. M. Stephens, assistant to executive vice president, Southern Pacific Lines in Texas & Louisiana, was promoted from first vice president to president; H. D. Curie, master carpenter, Baltimore & Ohio, was moved up from second vice president to third vice president; George W. Benson, division engineer, Central of Georgia, was advanced from third vice president to second vice president; and John M. Lowry, chief engineer, St. Louis Southwestern, and a director of the association, was elected third vice president. L. C. Winkelhaus, retired architectural engineer, C&NW, was re-elected treasurer.

New directors elected for three-year terms are: R. C. Baker (re-elected), engineer structures, Chicago & Eastern Illinois; and R. H. Miller, maintenance engineer, Lake Superior & Ishpeming.

B. M. Stephens
President-elect
Bridge & Building Association

FROG AND CROSSING repair work is now done in track by two-man welding crews using the truck-mounted outfits.

Mobile welding outfits pay off

Repairs to frogs and crossings are now made in track on the Lehigh Valley by a fleet of specially equipped trucks in the hands of two-man welding crews. Not only is this practice producing important savings for the railroad compared with the former policy of shipping trackwork units to a shop for repairs, but the outfits are also proving valuable and useful for many other jobs.

● The welder and helper parked their truck on the right of way close to the track. Within minutes the crew had run cables from the truck and was busy repairing a worn area in a manganese-insert frog. Although a rather deep crack was found in the casting, the job was completed in about 45 min. Soon thereafter the men were back in the truck and on their way to the next job.

This was one of seven specially equipped trucks used by welding crews on the Lehigh Valley to make in-track repairs to frogs and crossings. The introduction of the first truck for this purpose in 1954 signaled a new policy in the repair of special trackwork on this road, and one that the road feels is producing substantial savings in the cost of such repairs.

The former practice was to make repairs to frogs and crossings in a central shop. This required that they be removed from the track and replaced with a new or reclaimed unit. The worn frog or crossing was then shipped to the shop and repaired, and held on hand until it was reinserted at another location.

Repairs to frogs and crossings were originally made in a shop at Weatherly, Pa. Such items were also built new in this shop. When this shop was closed in 1937 the repair work was transferred to system shop at Sayre, Pa.

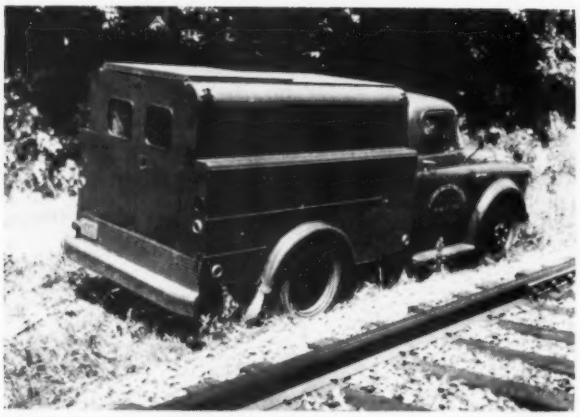
Prior to the time the first truck-equipped welding outfit went into service in 1954 manganese frogs and crossings were seldom repaired in track. No regular force was available for doing this work, but occasionally a welder in a nearby bridge and building gang or some other crew might be asked to repair a frog. Now, with a fleet of truck-equipped outfits available for doing the work, a frog or crossing is seldom removed from track for repairs.

Advantages of field repairs

The new practice, explains W. E. Kropp, the LV's supervisor of maintenance of way equipment, has a number of advantages and has resulted in a considerable reduction in costs. For one thing, he points out, it has eliminated the cost of handling the trackwork to and from the shop, as well as the labor cost of replacing frogs in track.

Also, he explains, the road is now able to pursue a policy of preventive

Outfits are fully equipped . . .



MOBILITY for each outfit is provided by a 1¼-ton truck equipped with a utility-type body. Trucks are Dodges or Chevrolets.

COMPARTMENTS along both sides of trucks are provided for carrying welding hose and cable and other necessary accessories.

They do many other jobs

The Lehigh Valley's mobile welding outfits are used principally for making in-track repairs to frogs and crossings. They also come in handy for doing a variety of other types of repair and welding work, such as:

- Welding machine parts
- Welding gas-burning switch heaters
- Welding, repairing sanding equipment
- Building up and repairing clamshell and dragline buckets
- Building up, hard-surfacing M/W tools
- Furnishing power for floodlighting at derailments and other emergencies
- Thawing frozen pipes in winter
- Welding, repairing rail lubricators
- Welding, repairing car-retarder parts
- Welding and repairing mile post, whistle and other roadway signs

maintenance with regard to frogs and crossings. Formerly they were left in track until they had become badly worn, requiring extensive repairs when finally they were sent to the shop. Now repairs are made before the damage becomes serious. The result is that in most cases a frog is not removed from track until it is ready to be scrapped.

Another advantage of the mobile welding outfits is that they are proving useful for a wide variety of miscellaneous welding and cutting jobs, and even work that has no relation to their primary function. For example, when a derailment occurs one of the outfits is almost invariably dispatched to the site not only to provide oxyacetylene cutting equipment if needed, but also in order that its generator may be used as a source of power for floodlighting the work at night. A partial list of those miscellaneous jobs for which the outfits are used is given in the accompanying box.

The mobile welding outfits are assigned to, and receive their work orders from, the track supervisors. Each track supervisor is assigned at least one of these mobile welding outfits. Supervisors' territories which, because of large yards, include a greater number of frogs than can be handled by one machine, are equipped with more than one of the outfits.

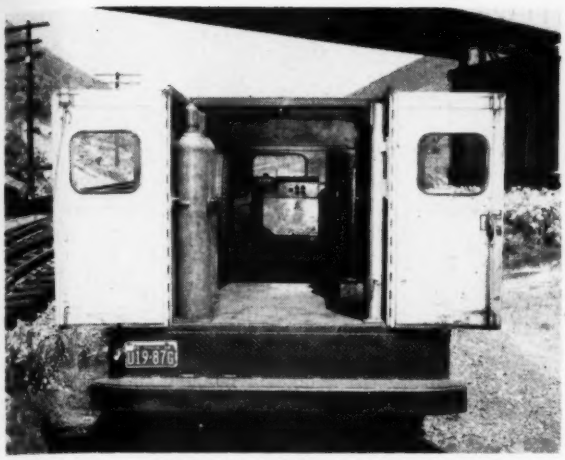
Carry complete outfits

The outfits each consist of a 1¼-ton Dodge or Chevrolet truck and carries a complete complement of equipment, tools and accessories needed by the welders in carrying out their duties. Bodies are of the typical utility type with bins and compartments along both sides for carrying welding hose and cable, welding rods, hoods, tools and other accessories. To adapt the bodies to its particular needs the road made a number of modifications in

Repairing a manganese frog . . .

GAS TORCH is being used here to remove defective metal from a manganese-insert frog preparatory to making repairs.

NEW METAL being applied with electric arc. In this case a rather deep cavity, occasioned by a crack, had to be filled.



EACH TRUCK is provided with a sliding roof section. Supplies carried include four cylinders each of oxygen and acetylene.

WELDING UNIT is being unloaded here with the help of a ½-ton chain hoist hung from the davit at the rear of the truck.

them, including a sliding roof section to permit ready access to the interior.

Key unit in each outfit is a portable self-contained welding outfit, known as an "Arc-Spot" welder, furnished by the Miller Electric Manufacturing Company, Appleton, Wis. Each of these consists of an 80-volt, 200-amp, 3000-watt a-c welding generator and a 1000-watt d-c auxiliary generator, both driven from the shaft of a 10-hp air-cooled gasoline engine. This unit is mounted on two rubber-tired wheels so that it may be taken from the truck and moved about on the ground as necessary.

In addition to providing power for welding, the welding generator is used to drive a 3-hp Remington Arms (Mall) flexible-shaft grinder with a wheelbarrow-type mounting. This unit may be used with either a straight spindle for operating an 8-in grinding wheel with a 1-in face or with an angular head for operating an 8-in cup wheel.

The auxiliary generator is used primarily for operating a portable ac-dc hand-held grinder with a 6-in diameter by 1-in face wheel. It also provides power for floodlighting.

Other equipment and accessories carried in each truck include 125 ft of electrode cable, 125 ft of ground cable, 100 ft of grinder cable and 50 ft of oxyacetylene hose. Four cylinders each of oxygen and acetylene are carried. For handling the gas cylinders and the generator to and from the truck a davit with a ½-ton chain hoist is mounted on the rear end.

A small push truck, with collapsible frame, which can be folded and placed in a minimum space, is carried in the truck for use in operating the welding generator on tracks inaccessible to the truck. This push truck is particularly handy when working in yards.

In recent years the Lehigh Valley has been installing an increasing number of crossings of heat-treated carbon steel. In repairing such material the welders use the electric-arc method. The type of welding rod used permits this work to be done during the warm-weather season without preheating or postheating, says Mr. Kropp. He explains that good results have been obtained from this practice. He adds, however, that the practice of preheating and postheating is still followed during cold or severe weather.

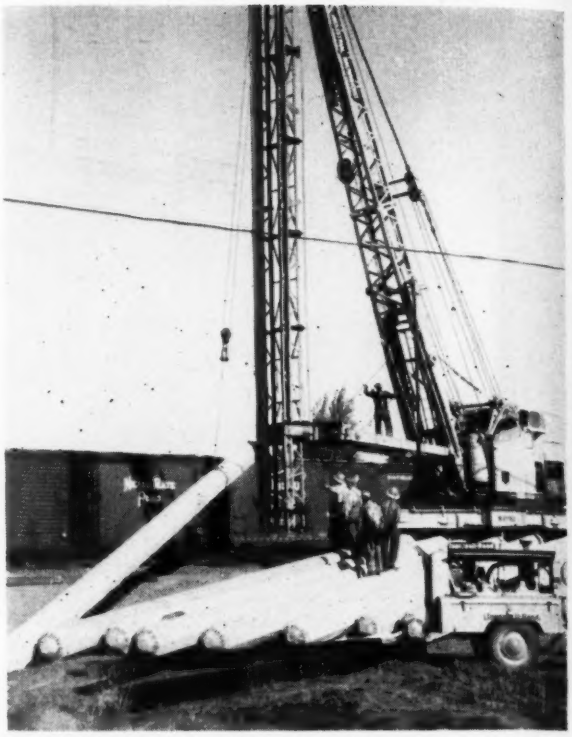
When making repairs to manganese trackwork the old material is removed with oxyacetylene torches and the new material applied by the electric arc. Switch points, driver burns and most battered rail ends are repaired by oxyacetylene welding. Welding of carbon steel (other than heat-treated) rigid rail frogs is also done by the oxyacetylene method.

LAYER of new metal is peened before the next layer is applied. Frog repair is only one of many jobs performed by the outfits.

GRINDING the weld with 1-in face wheel. Grinding wheels are driven by flexible shaft from motor with wheelbarrow mounting.

These considerations were among those that sparked the decision to build a prestressed concrete trestle.

- Need for span lengths of 25 ft.
- Desire for ballast deck and fireproof construction
- Deck members must be relatively light and shallow
- Piles must be capable of
  (1) Carrying substantial bending stresses
  (2) Withstanding handling stresses
  (3) Being driven in hard, rocky ground



PRESTRESSED PILE being lifted into leads preparatory to driving. Piles are octagonal and have hollow cores.

Nearing completion on the Western Pacific is a concrete bridge of advanced design. In this article, the WP's chief engineer explains his reasons for building a . . .

. . . Prestressed concrete trestle

By **Frank R. Woolford**

Chief Engineer
Western Pacific

● Inspection of Bridge No. 93 on the Western Pacific main line revealed the useful life of the timber structure was nearly completed and a new structure to replace it was in order.

As in the past with all bridges on the WP, a thorough inspection was made of the physical conditions at the site, such as the channel, stream runoff, etc., to establish the basic criteria for the bridge design. In this instance the crossing involves a stream called "Mormon Slough" and is located in Stockton, Calif. The city, under its own improvement program, had projected future plans for the channel and had already constructed a concrete box through one of the seven 15-ft spans of the bridge. It is intended that the box will handle all but flood waters. Since the city's plans require an opening with a minimum length of 100 ft to provide for flood water only a minor shortening of the structure was possible.

Redriving the bridge in kind would have been extremely difficult since, when redriving a timber-pile trestle, it is necessary to drive the new bents a little ahead or behind the existing bents if traffic over the structure is to be maintained. In this case the concrete box was of sufficient size to preclude moving in one direction, while movement in the other direction was contrary to the future channel alinement. Our only alternative was to investigate the possibilities of changing the span lengths and arriving at a 100-ft trestle in the proper location.

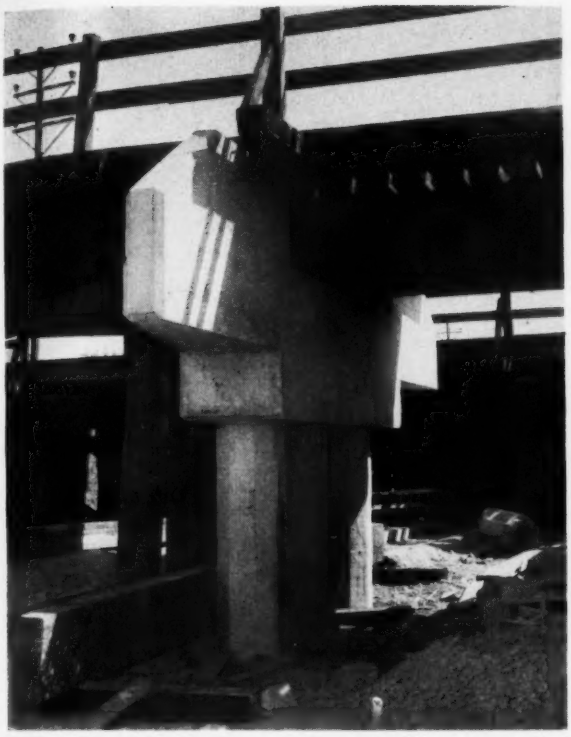
Span length required: 25 ft

It had been our practice in the past to confine the maximum length of timber spans to 20 ft, but here also 20-ft increments were not satisfactory. Spans 25 ft long appeared to be the most satisfactory for the given conditions, so this became our first specification for the design of the new bridge.

Wherever possible we have attempted to upgrade our reconstructed bridges by providing them with ballast decks which not only cut down on bridge maintenance but, in the case of timber trestles, greatly lessens the fire hazard. This location is heavily occupied underside by itinerants and others, resulting in further fire risks. Here then was Specification No. 2—the new bridge would have a ballast deck and be fireproof, if possible.

Keeping these facts in mind, an analysis of various types of structures was made, and rough estimates of the initial and future maintenance costs were prepared. These investigations revealed a preponderance of evidence in favor of the prestressed concrete type of structure, with metal ballast retainers and walks, over the full precast concrete structure.

An all-steel structure, although producing lighter deadloads, was found to have almost a 25 per cent greater material cost, with field and shop labor costs about the same as the two concrete types. In addition, the main-



NEW PILES were driven between and on each side of the existing timber chords. This view shows west bulkhead; at right is . . .

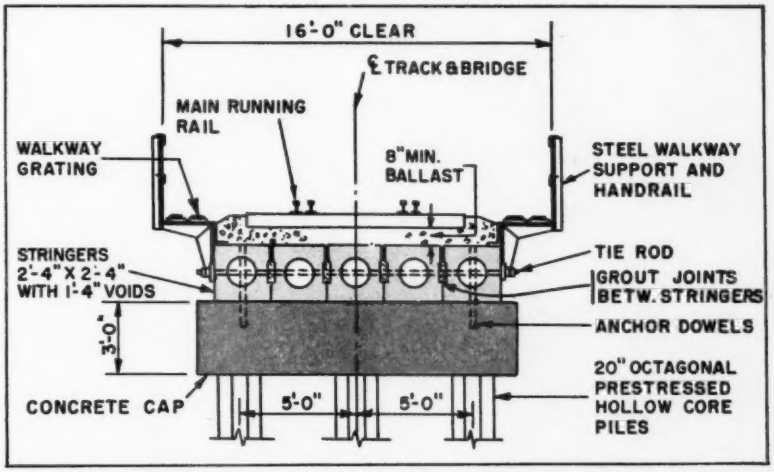
. . . TYPICAL intermediate bent. Caps are poured in place. New deck will be placed in panels under traffic.

tenance costs of the steel structure, while not excessive, were considerably greater than for either of the concrete structures.

Why prestressed piles?

Comparing precast concrete with prestressed concrete required a further analysis of the various properties of each. It had been decided to construct the new trestle with three-pile bents, thereby permitting the placing of piles between and on each side of the existing timber chords, with no necessity of shifting the deck to one side or the other while maintaining traffic. This called for a pile that not only would carry heavy axial loads but also substantial lateral loads which impose bending stresses in the supporting members. The advantage of prestressed concrete became readily apparent at this point.

By placing the pile section in permanent compression of approximately 700 psi, handling forces creating flexure stresses of this value could be withstood without damaging the member. Further, because of this ability to handle larger forces imposing flexural stresses, the section could be smaller, and, with a hollow core, would be lighter than the precast pile. These qualities would not only make the driving procedure simpler but would also allow the railroad to utilize equipment on hand, which included a driving rig and necessary attachments of heavier equipment.



BALLAST RETAINERS and walks are of metal as shown by this typical section. New bridge has four panels and is 100 ft long face to face of backwalls.

Furthermore the use of prestressed piling largely eliminates excessive cracking and spalling, and driving in extremely hard and rocky ground is possible without the pile damage experience with ordinary precast piles placed in the same material. Fortunately, we are situated in an area where there are several manufacturers of prestressed products and we were able to obtain a prestressed pile price that was definitely competitive with ordinary precast prices.

Of course, the bending properties, in addition to the other characteristics of pre-tensioned concrete, also were a determining factor when the decision for deck materials had to be made.

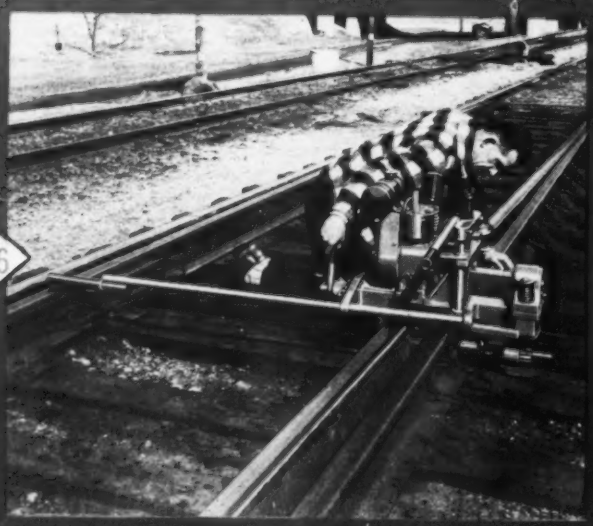
(*Continued on page 36*)

1 POWER WRENCH

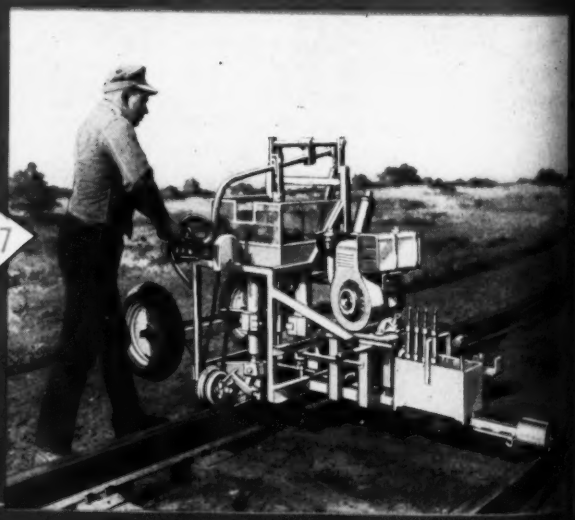
2 SELF-PROPELLED SPIKE PULLER

4 SELF-PROPELLED ADZING MACHINE

5 DUN-RITE® GAGING MACHINE



6 RAIL DRILL



7 TIE DRILL

BALLAST ROUTER

Save Time and Money on Relaying Rail with NORDBERG Mechanical Muscles®

These eight machines, shown in the sequence in which they are used for rail laying operations, are part of the full line of Nordberg "Mechanical Muscles" that have been designed, built and proved in use with the cooperation of track maintenance men.

The nation's leading railroads have proved that the Nordberg Track Maintenance Machinery shown here will save time and money on rail laying operations . . . and will improve the quality of the finished job. To stretch *your* maintenance dollars, take full advantage of the savings that are possible by putting Nordberg machines like these to work in your rail gangs.

NORDBERG® *Mechanical Muscles*®

SPIKE HAMMER

1. **POWER WRENCH**...In relaying operations, this fast, powerful tool leads off by quickly backing off the nuts of track bolts. Heavy duty, yet light in weight, this machine is easily handled on or off track.

2. **SELF-PROPELLED SPIKE PULLER . . .** This two-man machine follows the Power Wrench, exerts an upward pull in excess of 12,000 lbs. through spike tongs and pulls from 30 to 45 spikes per minute.

3. **BALLAST ROUTER . . .** Removes high crib ballast and sweeps tie areas clear so that adzing can be done faster, more accurately, and with greater safety. Adjustable for depth, the Ballast Router cuts a flat trench.

4. **SELF-PROPELLED ADZING MACHINE . . .** A one-man machine with greater power to speed adzing. Self-propulsion provides for force feeding into ties, adding to operator's efficiency. Tie seats are adzed level and in same plane.

5. **DUN-RITE® GAGING MACHINE and BRONCO . . .** Follows right behind the adzers. Tie plates are anchored to the ties in exact position, so the head-to-head gage is correct. Speed and extremely accurate and uniform gaging are made possible with the Dun-Rite because tie plates are gaged before the rail is placed.

6. **RAIL DRILL . . .** This compact, light weight drill is easily set up and adjusted for fast, accurate work. Self-tightening chuck is simple, and bit is positively held.

   In actual rail laying operations, the Power Wrench (Illustration No. 1) would now follow the Rail Drill, to uniformly tighten track bolts.

7. **TIE DRILL . . .** Drills two holes at once for rail holding or plate fastening spikes. Operated by one man who can spot and drill 48 holes in the 24 ties of a rail length in just 2½ minutes.

8. **SPIKE HAMMER . . .** Finishing up the operation, this machine, with a properly organized crew, can drive about 800 spikes per hour, 400 on either side of the rail . . . driving all spikes straight, vertical to the tie, and to the correct depth.

Write for complete information about any or all of these modern money-saving "Mechanical Muscles".

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Write For LEASING Plans

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R359

Prestressed trestle

(Continued from page 33)

The design of the prestressed members revealed that not only was it possible to construct stringers which were not so deep as to seriously decrease the channel opening, but, further, were considerably lighter than ordinary precast stringers of comparable strength. Here again, smaller equipment would be able to perform the job. As in the piling, the price of the manufactured structural members was competitive.

The location of this replacement structure is in the throat of a main yard with extremely heavy traffic movements, and the site is ideal to test workability and ease in installing the new type prestressed structure under traffic. And cost comparisons of prestressed concrete versus wood construction could really be tested for future use at this particular location.

Poured-in-place caps are constructed on each of the new bents and the new deck is then placed in panels. At the end of each panel the existing wood stringers are cut to land on the new cap and the old bent and stringers in that portion can then be removed wtihout taking the bridge out of service for more than the hour or two it takes to place the new deck.

The railroad track driver, ordinarily used to drive wooden pile trestles, will complete the whole operation with the only added equipment required being a 220-cu ft air compressor, a couple of paving breakers, and a Vulcan "O" hammer.

It is felt that for an increase in cost of about 30 per cent over a timber trestle we will obtain a fireproof, maintenance-free structure with an expected life of three times its timber counterpart.

That the prestressed concrete structure has many advantages over conventional types of structures is apparent. While the one we have constructed at MP 93 seems entirely satisfactory, it may not be the ultimate for some conditions and properties. Spans may need to be varied to avoid driving into old pile patterns, or prestressed members may be unavailable locally, or there may be other deterring factors. But from our studies this new type of structure is entirely practicable and economical for the replacement of wood trestle structures.

They had to tunne

To convert the south portion of the Canadian National's Mount Royal tunnel, located in Montreal, Que., from a double arch to a single arch, engineers first had to excavate a layer of quicksand. What they did was to solidify it by circulating refrigerated brine through pipes driven into the layer. This permitted them to tunnel through the material from one end.

● Installing a double crossover just inside the portal of a double-track tunnel with a center wall would present tough engineering problems under the best of conditions.

But if you want to make the job really tough you can add some complicating factors. For one thing you can pick an unusually busy tunnel, say one that handles commuter traffic as well as through trains. Then be sure that there's a relatively thin layer of overburden above the portal where the work is to be done, and that there are some streets and business buildings overhead. Then, as a final touch, introduce a thick stratum of quicksand in the overburden.

Yes, it really happened. Engineers of the Canadian National ran into this set of circumstances when they undertook recently to install a double crossover inside the south portal of the Mount Royal tunnel at Montreal. In solving the problems encountered on this job they came up with some pretty ingenious solutions. This is particularly true of the method devised for handling the quicksand problem. What they did was to freeze the sand into stability and then tunnel through it by conventional methods.

Here's the situation that made the project necessary:

The Mount Royal tunnel is located in the center of Montreal a short distance north of the station. It bores under Mount Royal for a distance of 3.5 miles and connects with the main line which runs west to Ottawa, Ont., and beyond to Vancouver, B. C. Constructed by the Canadian Northern, now part of the Canadian National, it was opened for service in October 1918.

The tunnel is used by thousands of commuters daily and by through trains bound for the Laurentian mountains and Northeastern Quebec. It is a double-track bore which was driven through limestone, except for sections at both ends where it breaks out into the overburden. For most of its length, the wall is bare rock. However, 1600 ft at the south end and 300 ft at the north end consists of a double concrete arch, constructed of precast concrete blocks, with a wall between the tracks.

Operating conditions between the tunnel and the CNR's Central Station at Montreal had been difficult and were getting worse with the increase in the number of commuter trains using the tracks. Crossovers were located 1600 ft inside the tunnel. This location precluded their use for quick switching moves.

Another inconvenience was that trains northbound out of the station from a portion of the tracks had to run on the southbound track for a distance of 1600 ft into the tunnel before they could cross onto the northbound track.

For some time a plan had been under consideration to solve the problem by installing a double crossover just inside the tunnel portal. This would require removal of the center wall of the double arch and its replacement with a structure spanning both tracks. Recently the matter was brought to a head by the desire of the city to start a project of its own in the Central Station area. Rearrangement of the station tracks, including the tunnel work, would have to be accomplished before the city could proceed with its construction plans.

Construction on the project proceeded in this manner:

The portion of the project adjacent to the portal of the tunnel was accomplished by open excavation. All of the utility services, sewer, water and

in 'quicksand', so they froze it

gas pipes and electrical conduits, underlying a street above the tunnel were either removed or diverted, except one 5 ft 6 in diameter sewer which was carried across the opening on a pair of steel trusses.

The overburden was excavated and the tunnel roof and side walls removed down to track level. Starting at this point the side walls were reconstructed and the new roof, consisting of precast, prestressed concrete beams, was placed from the street level.

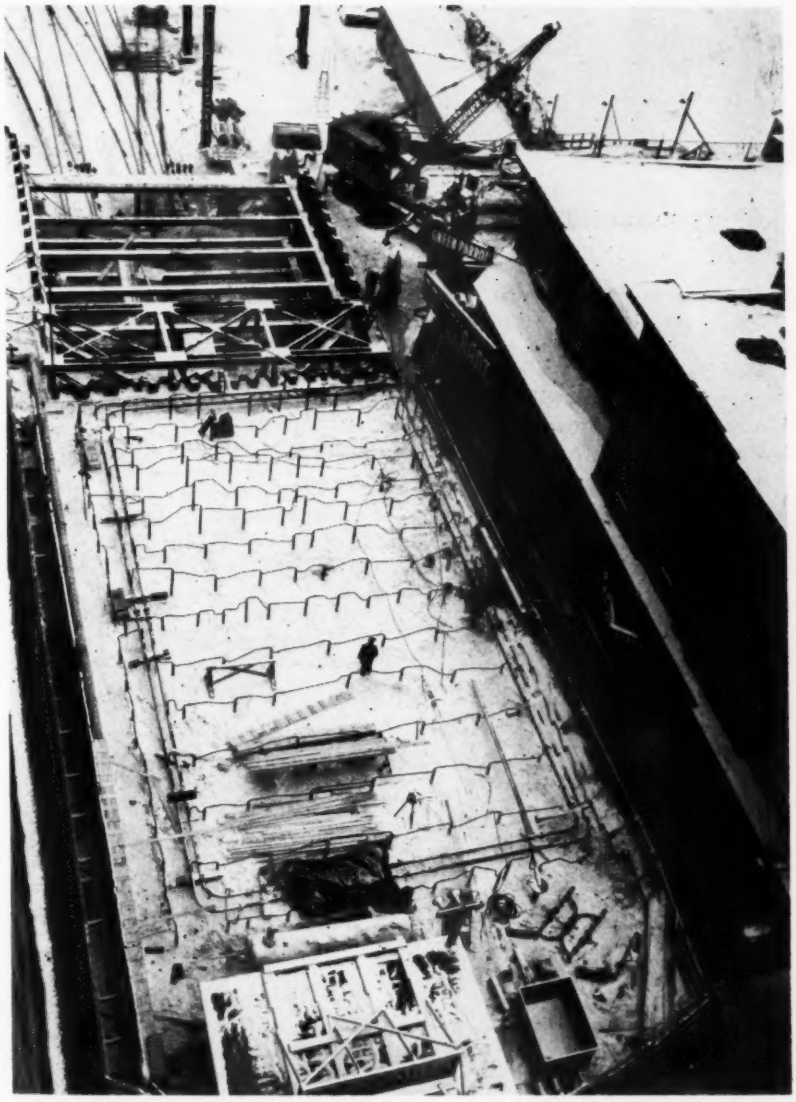
Removal of the roof and center wall of the tunnel was done at night when there were fewer trains. In this work the tracks were covered with secondhand timbers. About 5 lin ft of tunnel were removed each night and the debris picked up and loaded into cars. The tunnel was restored for daytime use by removing the timber cushion and inspecting the rails each morning. Sectionmen were kept on duty each night to clean up and inspect the track.

The area of work north of the open excavation was where the trouble started. Here the depth of material overlying the rock was 25 ft, divided into three strata. The top and bottom layers, 8 ft each, were composed of good to fair material. The intervening 9 ft, however, was a very fine silt with a water content so high that soil tests indicated that it had little or no stability. The area involved was about 75 ft long and 40 ft wide, its volume amounting to approximately 27,000 cu ft.

To complicate the work further any excavation through this stratum would have to be carried on very close to and well below the foundations of buildings, which did not extend down to rock, on both sides of the street.

It was finally decided that the safest procedure would be to freeze the stratum of water-saturated silt and excavate for the new roof by tunneling from one end.

The freezing was accomplished by circulating a refrigerated brine solution through a series of double-walled steel pipes which were driven vertically into and through the unstable stratum from the street level. The pipes were 15 ft long and were spaced from 2 to 4 ft apart. A total of 160 of them were used in the critical area.



WORK SITE above the tunnel showing brine pipes extending down through overburden into quicksand. At top of view is shown section where tunnel roof was removed.

The freezing equipment was said to be 1000 times more powerful than a home refrigerator. It consisted of two electrically driven compressors and a heat exchanger. The primary refrigerant, "freon," was compressed and circulated through the heat exchanger by the compressors where it was refrigerated to a temperature of about 10 deg below zero F. It was then circulated through the vertical pipes where it performed its function of freezing the earth above the roof of the tunnel. It took about five weeks to accomplish the solidification. The system was controlled automatically and ran continuously throughout the progress of the work, about five months.

When the solidified material was removed from the area above the tunnel the roof of the excavation was shored with steel. The new tunnel roof, consisting of a single reinforced concrete arch, was constructed over the top of the original double arch. The old roof and center support were then removed clearing the way for the installation of the double crossover.

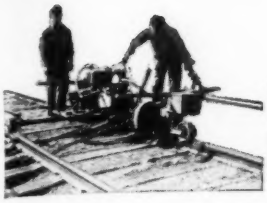
FAIRMONT

Digs uniform tie beds faster than fifteen men!

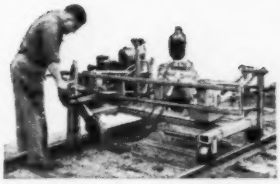
It takes as many as fifteen men, working at top speed with ordinary hand tools, to dig a ten-foot tie bed as fast as the Fairmont W87 Series B Tie Bed Scarifier (below). Even then, it's doubtful manual crews could equal the uniform predetermined depths, or dig beds consistently square to the track, working at a rate of 800 tie beds per day!

The W87 can be used in any type ballast, and whether the ties are being dug in, or replaced when track is raised. Excavated ballast is deposited nearby for easy tamping and dressing. A high gear allows the W87 to deadhead at 25 mph, and a hydraulic turntable and a set-off permit clearing at the work site.

And best of all, with one man digging hardpacked tie beds in less than a minute, the savings possible will pay for each W87 during the first season of tie renewal operations—*and* earn a handsome profit on the machine investment! So why not mechanize your tie gangs with a Fairmont W87 Series B Tie Bed Scarifier? Call or write for full information.

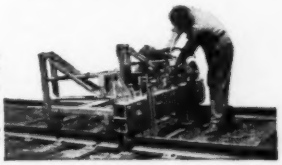


W68 SERIES A HYDRAULIC TIE REMOVER. Requires only two men to push out old ties at the rate of one per minute.



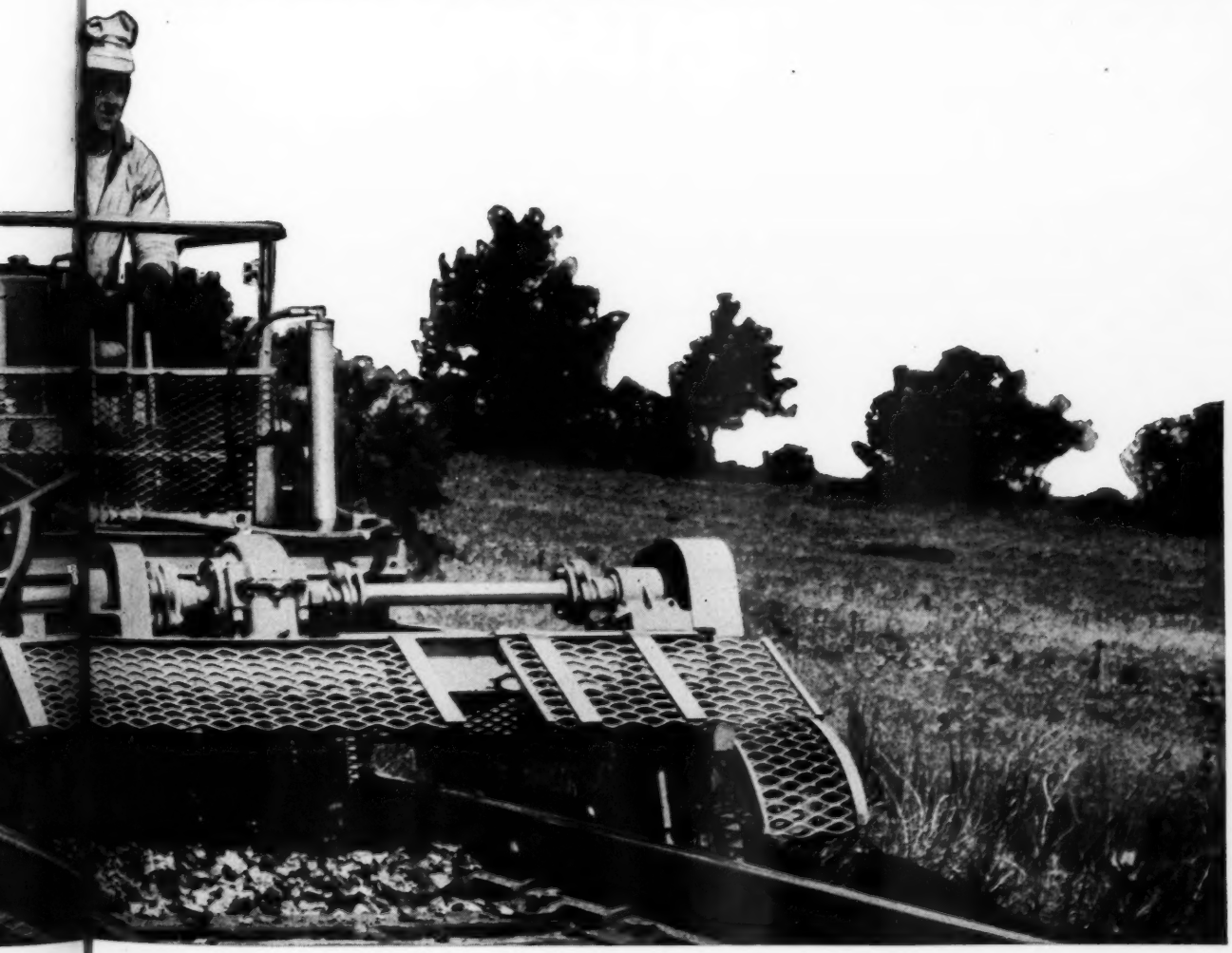
W84 SERIES B HYDRAULIC SPIKE PULLER. Operated by one man, it works both sides of both rails, pulling 15 to 20 spikes per minute.

W90 SERIES A TIE HANDLER. Two man operation. Inserts new ties or removes old ties in a few seconds. Self-propelled.



W86 SERIES B HYDRAULIC RAIL LIFTER. One-man operation lifts rails—makes removing or inserting plates quick and easy.

FAIRMONT RAILWAY MOTORS, INCORPORATED • FAIRMONT, MINNESOTA



Equipment maintenance school

Eleven roadway-equipment maintenance supervisors recently completed the second one-week service school held at the Caterpillar Tractor Company, Peoria, Ill. Representing seven railroads in the United States and Canada, the supervisors were given intensive classroom and shop instruction on tractor components, controls and engine systems. Scope of the school included productive maintenance as well as various service procedures and problems and familiarization with new Caterpillar equipment.

News briefs in pictures . . .

Missile launching cars

Intermediate range and intercontinental ballistic missiles may be launched, it is said, from any point on America's railroad network by the use of specially built cars (right). This mobile system of launching missiles is the joint development of ACF Industries, Inc., and American Machine & Foundry Co.

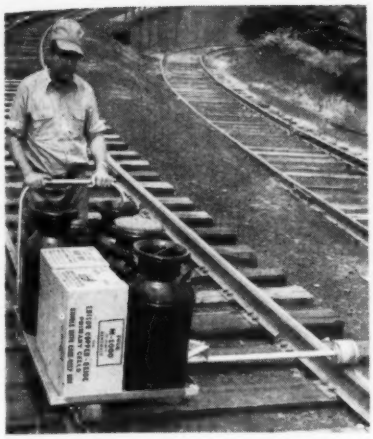
SAL lays welded rail

Utilizing welded rail for the first time, the Seaboard has recently completed laying 13 miles of 115-lb rail near Atlanta, Ga. The rail was welded into 1300-ft strings by the oxyacetylene process. The strings were placed by an Austin-Western hydraulic crane.

Plastic water line

The Pennsylvania has installed a cold-water line consisting of 1½-in polyvinyl chloride (PVC) pipe. Manufactured by the A. M. Byers Company, the plastic pipe was selected for its resistance to the corrosive action encountered in the cinder-bearing soil.

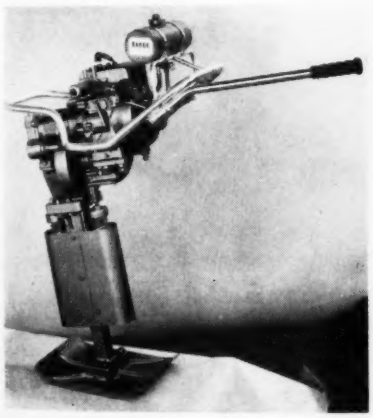
PRODUCTS



Has 1000-lb capacity . . .

Track dolly

CONSTRUCTED completely of aluminum, the new Transport Products one-man track dolly is stated to have a capacity of 1000 lb. Designated Model M-200B, it weighs 40 lb and is designed to be assembled or disassembled without the use of tools. The dolly is claimed to be easily carried by one man and to be equipped with an insulated outrigger wheel. A handle is provided which can be used at either end of the dolly. *Transport Products Corporation, Dept. RTS, 3008 Magazine St., Louisville, Ky.*



Versatility claimed for . . .

Earth compactor

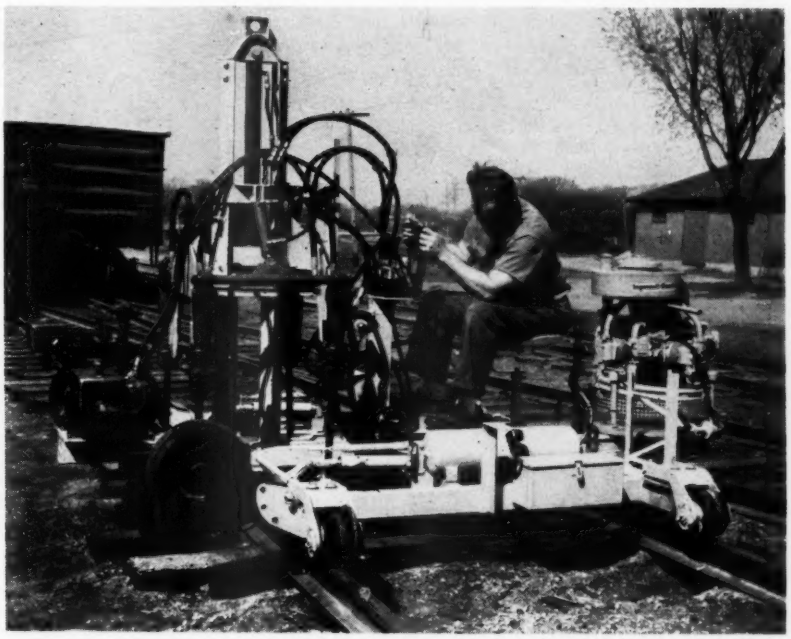
SAFETY, versatility and easy maintenance are the dominant characteristics claimed for the new Racine Rapak earth compactor. It is a self-propelled, one-man-operated, self-contained unit which is stated to require no auxiliary equipment. The latter feature is claimed to result in handling ease and safety for the operator and greater mobility. Weighing 145 lb, the new machine is powered by a 3-hp, 4-cycle gasoline engine and is equipped with an adjustable throttle, recoil starter and centrifugal clutch. One-shot lubrication and simplicity of design are stated to hold maintenance to a minimum. The Rapak is designed to compact earth at a rate that is adjustable from 400 to 600 blows per minute. It is claimed to operate in either cohesive or granular soils and to compact these types to over 100 per cent Proctor density.

Interchangeable shoes are available which give the compactor a range of working widths from 6 to 18 in. Extensions are also available which permit the machine to work at greater depths. *Racine Hydraulics & Machinery, Inc., Dept. RTS, 1524 Frederick St., Racine, Wis.*

Leaks in pipes stop with . . .

Repair clamps

PERMANENT or emergency repairs can be easily made to leaking pipes, it is claimed, by installing Marman improved heavy-duty, corrosion-resistant Patchmaster pipe repair clamps. The clamps are manufactured for pipe sizes from ½ in through 8 in and in widths of 3, 6, 9 and 12 in. One of the features of the clamp is stated to be the new lug design which allows the clamp to conform to the contour of the pipe under high torque without biting into the pipe. Another feature is the "Buna N" pad which is claimed to be able to withstand high clamping pressures without extruding and to be adaptable to oil, gas, water and steam. *Aeroquip Corporation, Marman Division, Dept. RTS, 11214 Exposition Blvd., Los Angeles 64, Cal.*



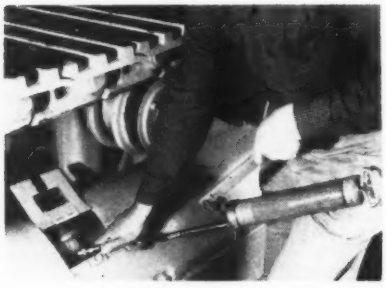
Improvements made to . . .

Spot tamper

ANNOUNCEMENT has recently been made of several improvements to the Fairmont W99 one-man-operated, self-propelled spot tamper. Improvements include a two-wheel drive, small foot brake, increased power for the propelling motor and a single-line lubricator which replaces the four individual-gun lubricators. In addition, both ends of the machine have been fitted with a drawbar, and the operator's seat has been relocated in the center of the carriage. Set-

off-lift is claimed to be reduced by 60 lb by moving the hydraulic engine to the tamping-head side of the unit.

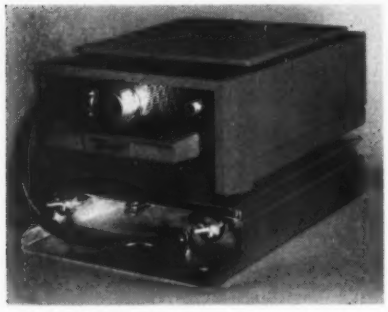
The W99 utilizes air to operate the tamping tools and rail clamps. Hydraulic power is used for propulsion and for raising and lowering the tamping head and moving it laterally. The latter also is used to tilt the tamping tools under the ties for the tamping action. Pneumatic tires are provided for setting the machine on or off the track. *Fairmont Railway Motors, Inc., Dept. RTS, Fairmont, Minn.*



New track adjusters for . . .

Crawler tractors

ADJUSTMENT of track tension on crawler tractors is claimed to be accomplished easier by the use of new hydraulic track-adjuster attachments. Designed for use on Caterpillar D4 and D6 tractors and No. 977 Traxcavators, the method utilizes a standard hand-operated grease gun in place of the former bolt-and-wrench system. The manufacturer states that track life is prolonged since operators, due to the ease of making the adjustments, are encouraged to correct track tension at proper intervals. *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*



Designed for railroad use . . .

Transistorized radio

A NEW transistorized two-way radio for railroad use has been announced by the Bendix Radio Division of the Bendix Aviation Corporation. Designed to comply with AAR specifications, the 2R Series radio is available in three versions: 72-v dc, 12-v dc and 117-v ac. The 2R is said to be contained in a compact case which can be mounted on a standard AAR base, such as the Bendix 1BM Mounting Base, in automobiles, cranes, snow-fighting machines or other vehicles.

The manufacturer states that extensive use of transistors and printed circuits has permitted a weight and size reduction of more than 40 per cent under comparative tube equipment. The radio is designed so that the transmitter, receiver and power-supply components are completely separate plug-connected units. This is stated to aid routine maintenance procedures.

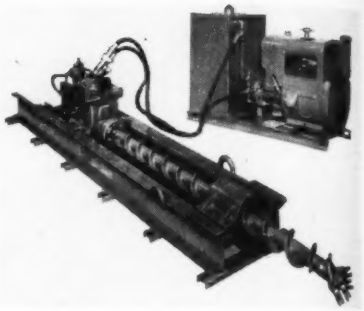
Transistors and diodes are used throughout the receiver with the exception of two RF tubes. These have been retained, it is said, to provide maximum performance. The receiver is also said to feature stabilized squelch circuits, a sealed unitized selectivity package and a transistorized 12-watt audio circuit. Both the receiver and transmitter are designed to be converted into three or four-channel operation by the addition of plug-in components. *Bendix Radio Division, Bendix Aviation Corporation, Industrial Communications and Electronic Products Group, Dept. RTS, Baltimore 4, Md.*

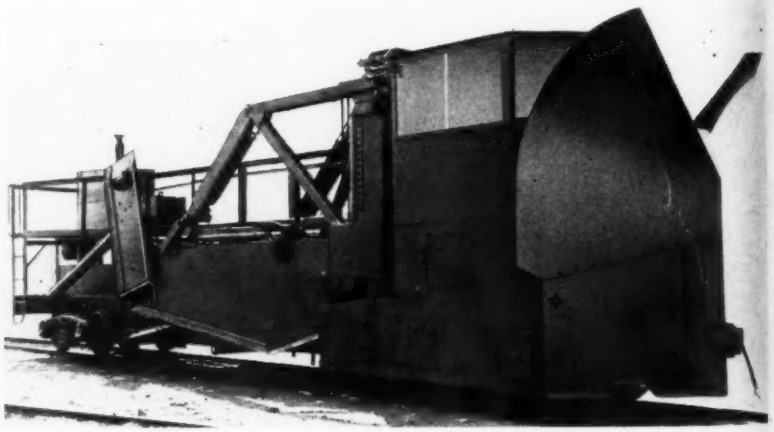
•

Pipe installed with . . .

Trench drills

A NEW LINE of Salem trench drills is available for installing pipe through railroad and highway embankments and under streets without breaking pavement or disrupting traffic. The new units are claimed to have drilled holes and pushed pipe as far as 250 ft and are limited only by pipe weight and earth or rock formations to be drilled through. The drill operates in a trench dug to the depth at which the pipe is to be laid. The auger rotates inside the pipe and advances it as the hole is drilled. The hole is drilled and the pipe pushed simultaneously. The auger flights feed the drilled earth back through the pipe. Additional lengths of auger and pipe are added as the operation progresses. The drills will handle augers 4 in to 24 in. in diameter and 2 ft to 6 ft in length. All drills have variable hydraulic feed installed in a rigid frame for drilling accuracy. The Model 10-D is designed to handle augers up to 10 in. in diameter. Augers up to 16 and 24 in respectively can be handled by the Models 16-TD and 24-TD. A larger model is available which will handle augers 36 in. *The Salem Tool Company, Dept. RTS, Salem, Ohio.*





Hydraulic power for . . .

Spreader-ditcher

IN ADDITION to the Jordan line of pneumatically operated spreaders, spreader-ditchers and snow plows the company has announced a new series of hydraulically operated models. The new machines incorporate a 2000-psi integral hydraulic system which includes diesel-engine-driven twin pumps. The pumps provide pressure to a split-type, all-hand-operated manifold located in the control room which is placed in a forward position on the machine. This is said to result in uniformly smooth and positive response when the operating controls are actuated. The unit is equipped with quick-acting sliding ditch sections which are stated to extend from, or recess into, the ditcher template wings in less than five seconds. In addition, it is stated that the wings have been lengthened and strengthened to provide larger roadbed cross sections and that each is equipped with adjustable ballast scarifying bars for handling cemented ballast. Four improved, telescopic gear-rack-type braces support each wing panel assembly with provision for the fourth brace to be attached to the main wing when the unit is in carrier wing form. Optional accessories include high-front snow plow, ice-cutter attachment, ballast carry wings, complete electrification and infra-red-ray heating system. *O. F. Jordan Company, Dept. RTS, East Chicago, Ind.*

(More on page 46)

now read about the most efficient use of hydraulics ever applied to a tamper!

the NEW MATISA hydraulic "60" SPEEDTAMPER

TAMPING UNIT DOUBLE CLUTCHES ELIMINATED... NOW CONTROLLED BY REVERSIBLE HYDRAULIC MOTORS!

Less Wear on Man and Machine. Hydraulics eliminate shock loads, gears, clutches. Eliminate fatigue on man and metal!

Less Maintenance. Fewer costly gears and parts to buy—or *wear*. Less repair *time*, lower maintenance *cost*. Standard American components and parts.

More Production. Hydraulically positioned tamping units provide positive action, speedy operation. Assures maximum production.

Safe—Quiet. V-Belt drives with multiple disc clutches eliminate gears and noise, reduce maintenance and serve as safety clutches.

Fast—Efficient. Instantaneous split-head operation increases speed and production for both spot surfacing and out-of-face work.

THE MATISA EQUIPMENT CORPORATION 1020 WASHINGTON AVE CHICAGO HEIGHTS, ILL

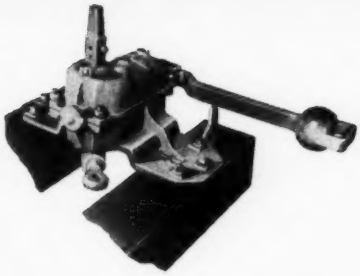


Figure 22. Extra heavy duty automatic stand for turnouts where switches are apt to be run through. Target always indicates true position of points.

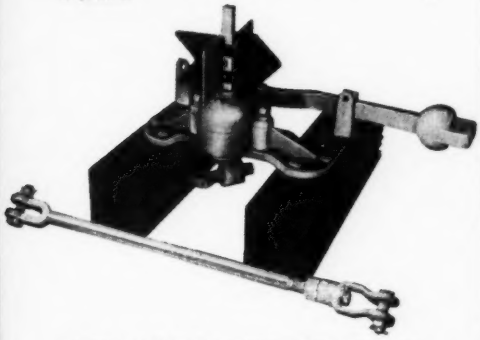


Figure 40. Parallel throw gearless stand recommended for lightly used sidings and industrial tracks. Only three internal working parts.

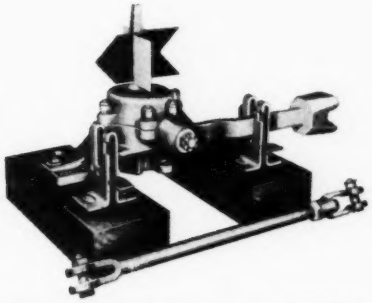


Figure 36D. Parallel throw gearless stands, in high and low types, for main line and general use. Long life and minimum lost motion are assured by extra large bearing surfaces on wearing parts of heat treated steel forgings.

Figure 112D. An extremely rugged column type main line stand. Hand lever cannot become disengaged from bracket. Lever is thrown parallel to track, safe-guarding operator.

There's a Racor® switch stand to meet today's every need

On the high iron, at sidings, or in the most modern yards . . . there's a Racor switch stand designed, built, and proven to perform through the years.

The more severe your operating conditions . . . the more demanding your maintenance standards—in short, the more you ask of a switch stand—the more satisfied you will be with Racor. Year after year, Racor has provided the right stand at the right location for leading U. S. and Canadian railroads.

Racor switch stands are truly built to take it. All these stands are equipped with 1¾" dia. crank eyes for extra strength and safety. Ask your Brake Shoe representative to help you choose the right Racor stands for your needs.
American Brake Shoe Company,
530 Fifth Avenue, New York 36, N. Y.

A-2995

AMERICAN Brake Shoe COMPANY

Quality products
cut your ton-mile costs

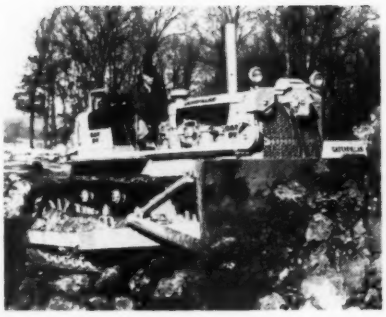
In Canada: Dominion Brake Shoe Company, Ltd.

Coatings applied with . . .

Pole-type gun

ROOF, foundation and steel-tank coatings, concrete curing mixtures, black top sealers and sound deadeners are claimed to be quickly, economically and efficiently applied by a new pole-type extension gun. The unit is stated to feature a rugged, simple construction which provides trouble-free service.

The gun is equipped with lever handle valves which control the air and fluid supply. The fluid pipe and metal air tube are reinforced by clamp-type spacers. The special ¼-in internal nozzle combination is contained in a spray head which is set at a 45-deg angle. It is designed to spray in a large, round pattern which is claimed to provide a uniform coverage of the desired thickness. *The DeVilbiss Company, Dept. RTS, Toledo, Ohio.*



Greater power featured by . . .

New Tractor

HIGHER lugging ability, decreased maintenance and greater power are the features claimed for the new Caterpillar D7 Series D Tractor. It is the third crawler in the company's line of tractors to be powered by a turbocharged engine, the other two being the D9 and D8 machines. Lugging ability is said to have been increased 80 per cent over the previous model. Contributing to this is the higher torque rise of the engine. Service time is stated to have been reduced by the use of the dry-type air cleaner and lifetime-lubricated rollers, carrier rollers and idlers. These components are lubricated during factory assembly and are claimed to need no further lubricant until they are rebuilt. The engine on the new D7 develops 140 flywheel horsepower, an increase of more than 9 per cent over its predecessor. Drawbar horsepower has been increased from 102 to 112. The transmission lubrication system has been provided with full-flow filtration. Bearings are pressure-lubricated and the transmission gears operate under a continuous spray of oil. *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*

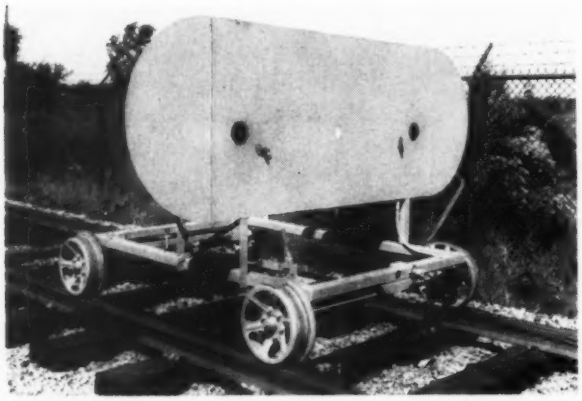
SUNSAFE Hydraulic Fluid will not flash or support combustion, it is claimed.

Features fire resistance . . .

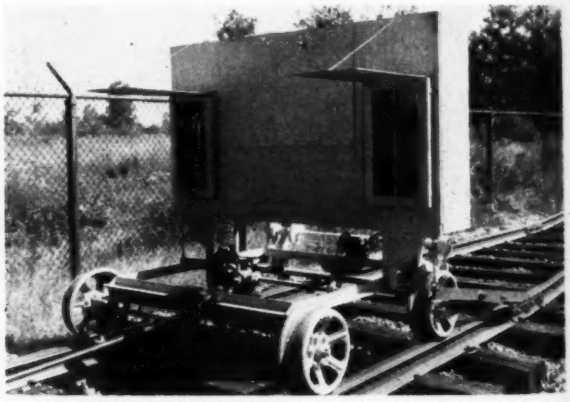
Hydraulic fluid

A WATER-IN-OIL emulsion-type hydraulic fluid is available which is claimed to be a stable compound that will not flash or support combustion. In addition to its fire-resistant properties, the new material, called Sunsafe, is stated to have antiwear and antirust characteristics, a high viscosity index of 130, excellent film strength at high temperatures and good thermal stability even when subjected to high operating temperatures for prolonged periods of time.

Sunsafe is available in two grades, one for use in industrial machines and systems and the other for use in hydraulically-operated mining machinery. It is formulated from specially refined, high-quality base oil in a water-oil ratio of 60:40. The new fluid may be used in any hydraulic system at pressures up to 2000 psi and 150 deg F. *Sun Oil Company, Industrial Products Department, Dept. RTS, 1608 Walnut St., Philadelphia 3, Pa.*



ELECTRONIC track raiser includes a projector unit which sends a band of light to a . . .



. . . RECEIVER unit which operates ahead and is connected to and controls a jack tamper.

Electronics used on . . .

Track raiser

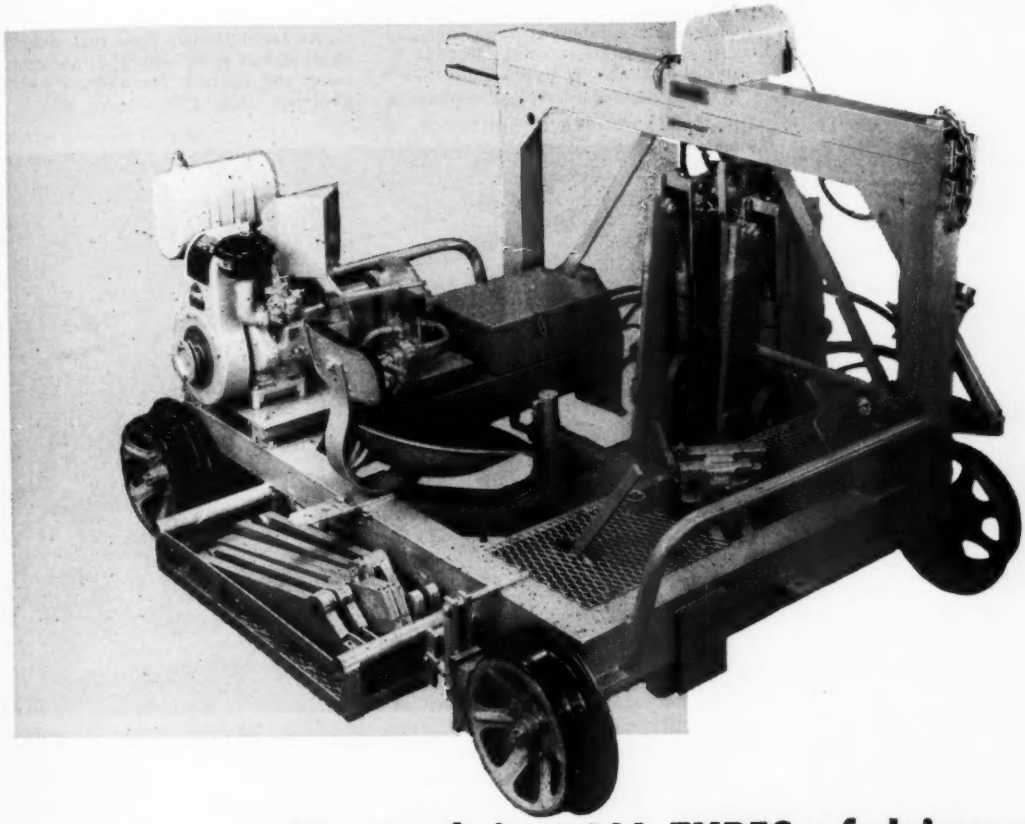
OPERATION of a jack tamper is claimed to be made completely automatic by the use of the new Pullman-Standard Electronic Track Raiser. The machine consists of two light-weight, four-wheel units—a projector unit and a receiver unit—which are coupled together by a 25-ft spacer bar. The receiver unit is also connected to the jack tamper, which works backwards, so that all three units move together from one jacking station to the next.

The projector unit operates on corrected track and is equipped with a light source which transmits a horizontal band of light towards the receiver unit. The latter operates on uncorrected track and is equipped with photo-electric cells which control the jacking mechanism of the jack tamper. The receiver unit is also equipped with a small roller which rides on the top of each rail immediately ahead of the receiver unit for the purpose of detecting surface irregularities at the jacking station. Irregularities cause the photo-electric cells of the receiver

RACINE

Hydraulically operated

"Anchor Fast" ANCHOR APPLICATOR



For applying ALL TYPES of drive-on or tool applied hang-on anchors

The only machine, of its kind, in the field. The "Anchor-Fast" is hydraulically controlled and self-propelled. Maximum speed 15 mph. Unit is powered by a hydraulic jack cylinder for "off track" movement or can be revolved 180° for work on opposite rail.

CONSTRUCTION AND OPERATION FEATURES

- Smooth hydraulic pressure with adjustable stops, prevents over driving.
- Positive anchor-to-tie application.
- Machine can be used for either single or box anchoring.
- Powered by a 9.2 hp gas engine with clutch and reduction gear.
- Size of unit—95" x 75" x 56". Wgt. 2300 lbs.

RACINE SECO

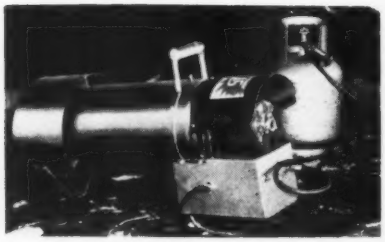
RACINE HYDRAULICS & MACHINERY, INC.

Machinery Division **Racine, Wisconsin**

unit to be moved into the path of the light beam actuating the jacking mechanism of the jack tamper. As the track is raised the photo-electric cells are moved out of the light beam, stopping the jacking action.

The light beam extends the width of the track so that it also serves as a cross-level reference plane, enabling both rails to be raised simultaneously to what is claimed to be perfect surface and cross level. In addition, the light source of the projector unit can be moved from one side of the unit to the other so that either rail can be used as the grade rail. The receiver unit is also equipped with a cam device which enables the jack-tamper operator to automatically make "run-ons" or "run-offs" from 1 in to 4 in per 100 ft. These operations are stated to be accomplished without the use of additional manpower.

The manufacturer states that the new Electronic Track Raiser can be used for all track-surfacing jobs and can be adapted to any make of jack tamper. *Pullman-Standard, Dept. RTS, 200 South Michigan Ave., Chicago 4, Ill.*



Portability is feature of . . .

New space heater

BURNING liquid petroleum gas and weighing 45 lb, a new space heater is available which is designed to be easily carried from one location to another. Designated the Stow LPG200 Portable Space Heater, it is stated to have an output of 200,000 Btu and to be a multi-purpose, radiant, recirculating heater. It is claimed to be suitable for heating areas not provided with central heating, such as shops, warehouses, platforms and garages. It is also claimed to be useful for preheating engines and for thawing out equipment and materials.

Upon arrival at the location where heat is desired the unit is prepared for operation by connecting to a bottle of L.P. gas and plugging into a 110-v ac outlet. During operation, cold air is sucked into the heater through the outer schield, which is designed to act as a Venturi tube, where it is mixed with hot air. The resulting warm air is then circulated by a fan which is driven by a ⅛-hp motor. Circulation is rated at 2000 cfm.

The standard model of the new space heater is equipped with a burner control which is designed to quickly turn off the fuel supply in case of power failure or the flow of gas is interrupted. Optional equipment includes thermostats for use at locations where temperature control is desired. *Stow Manufacturing Company, Dept. RTS, 436 Shear St., Binghamton, N. Y.*

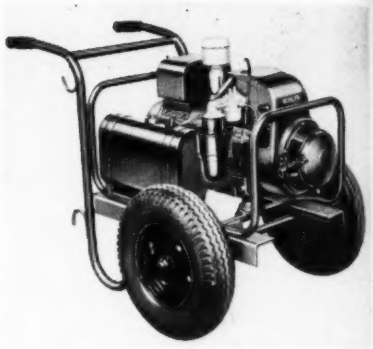
Rubber-tired cart for . . .

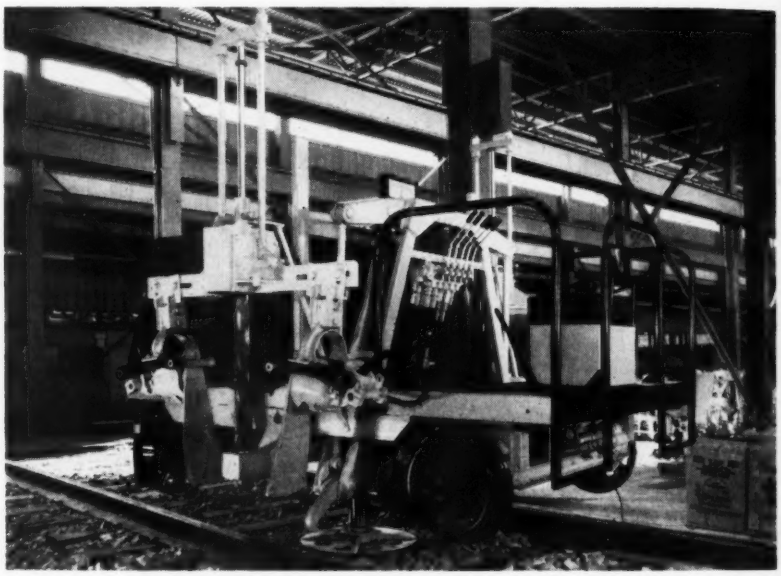
Electric plants

TWO MODELS of Kohler high-frequency electric plants are available mounted on two-wheel, rubber-tired carts. Each of the two models furnishes 2500-watt, 180-cycle, 3-phase power. The Model 2.5MV55 has an output of 230-v ac and 115-v dc. The Model 2.5MV35 has an output of 115-v ac-dc.

The manufacturer states that vibrators, paving breakers and saws which require 230-v, 3-phase, 180-cycle ac can be operated simultaneously with standard portable electric tools and floodlighting equipment which operates on 115-v dc. Also that small concrete vibrators and high-cycle portable electric tools can be operated by the 115-v, 3-phase ac and 115-v dc model.

Standard equipment on the two plants includes recoil starter, 2-gal fuel tank, mechanical fuel pump with filter and shut-off valve and oil-bath air cleaners. *Kohler Company, Dept. RTS, Kohler, Wis.*





High rate claimed for . . .

Tamping jack

CLAIMED to be adaptable for use with a wire device, scope and target, or spot board, the new Tamper Limited Model TJ-2 Tamping Jack is stated to have a production rate of up to 40 rails per hour. The machine incorporates a jacking element which is designed to operate independently of the main carriage in order to leave the four wheels in normal contact with the rail. This feature is said to facilitate the use of any leveling device. The lifting rams are designed to lift the track 16 in with a thrust of 28,000 lb. Each ram is independently controlled.

One of the features of the unit is stated to be the rapid travel of the jack shoe down to, or up from, the ballast. When it comes in contact with the ballast a hydraulic device automatically changes the action to a controlled lift. Rail clamps are automatically engaged or disengaged simultaneously with the lowering or raising of the jack shoe. The clamps are said to hold fast on headfree rail and on angle bars.

The machine is equipped with four heavy-duty vibratory tampers which are resiliently mounted to two work heads that are said to be independently operated to give a downward thrust of 2000 lb each. Tamping is done to the tie adjacent to the jack shoe and only outside of the rails.

The jack-tamper is powered by an air-cooled gasoline engine and is equipped with an alternator which is said to allow about 4 kw of power to be used simultaneously with the jack tamping operation for operating auxiliary tools or floodlighting equipment. The unit is stated to travel at speeds up to 20 mph. Braking is accomplished hydraulically by reversing the propulsion lever or by mechanical brake drums which are located on the front wheels. The mechanical brakes are actuated by either foot pedal or hand lever.

A built-in, double-acting hydraulic jack is located at the balance point of the unit for the purpose of reversing its direction of travel or lowering onto set-off rails for removal from the track. The latter is claimed to be accomplished in less than 2 min. *Tamper Limited, Railway Division, Dept. RTS, 160 St. Joseph St., Lachine, Montreal 32, Que.*

Unloading necessary ballast

How does a foreman determine that he is unloading the proper amount of ballast to make a specified track raise? Say one inch? Four inches? Six inches? What methods are used to assure the required amount is unloaded uniformly? Explain.

Cars per mile

By R. M. Low
Assistant Division Engineer
Chicago, Milwaukee, St. Paul & Pacific
Perry, Iowa

A good general rule to follow is to unload as follows:

Raise	Cars Per Mi					
1 in	10	or	1	car	every	500 ft
2 in	20	or	1	car	every	250 ft
3 in	30	or	1	car	every	170 ft
4 in	40	or	1	car	every	125 ft
6 in	60	or	1	car	every	80 ft

When unloading ballast for a 6-in raise, the center of the track should be filled to the top of rail and the sides of the track filled full to the ends of the ties.

When unloading ballast, several doors are opened simultaneously by a small amount, to assure a continuous, even flow of ballast. The amount unloaded is then regulated by the speed of the train and the amount of opening of the doors. By checking carefully the number of cars unloaded to the mile, the foreman soon learns to unload what is required for the desired track raise.

Experienced foreman

By H. R. Wootton
Engineer Maintenance of Way
Algoma Central & Hudson Bay
Sault Ste. Marie, Ont.

This a complex problem requiring a complex answer to which I do not feel I can do justice. There are various types of ballast, grades of ballast, types of available ballast cars and ballasting equipment and varying conditions of roadbed to be ballasted. There are many "rules of thumb" applicable to this job, but almost without exception local oddities require variations in these rules.

In my opinion the basic requirement in achieving maximum results in unloading ballast in proper amounts, is an intelligent, experienced ballast unloading foreman. All the predetermined methods cannot replace this type of man on such a complex type of job.

Control door openings

By L. A. Lawson
Roadmaster
Canadian National
Melville, Sask.

In unloading ballast the amounts required for any specific lift will depend a lot on the grade outside the ballast shoulder. The lower the subgrade the greater the amount of ballast required. A 1-in lift on a well-built subgrade requires about 200 cu yd per mile. A 4-in lift on a similar well-built subgrade requires at least 1000 cu yd per mile, and a 6-in lift on a similar subgrade requires approximately 1500 cu yd per mile. As the lift goes higher more ballast is required for each inch of lift owing to the wider shoulder required.

Unloading foreman usually measure ballast required by car loads. A 4-in lift, when cars are loaded at 50 cu yd per car, requires 20 cars per mile. He ascertains the amount to be unloaded by establishing how far a car goes. By this method a good unloading foreman has no trouble in figuring out how many cars to unload per mile. Ballast unloaded in the center of the track is controlled more easily as to quantity than that unloaded on the outside of the track. This is because only so much ballast will flow out of the center before it piles up and further flow is prevented. However, when ballast is unloaded on the outside, there is nothing to prevent it from running out of the cars in any amount.

Even dry crushed rock will not run clean from the newer cars without "shaking" or rough handling by the locomotive. This leaves the unloading foreman at the mercy of the engineman when trying to make a smooth job and makes it harder for him to unload the exact amount of ballast

However, the amount to unload depends on the lift and the distance it takes each car to empty. The foreman usually controls the amount of ballast he has between the rails, and he carefully watches its height. He also carefully watches the ballast as it is unloaded on the outside and he regulates the flow as much as possible by controlling the opening of the side doors in accordance with the speed of the train and the amount of ballast that comes from the cars. For a 1-in lift the amount of ballast can easily be unloaded in one pass. However, for a 4-in or 6-in lift, two or more passes may be required, depending on the height of the rail in most cases. The higher the rail the greater the amount of ballast that can be unloaded at one time, especially if the material is unloaded in the center of the track.

Use a drag crosstie

By R. R. Barnes
Roadmaster
Atlantic Coast Line
Rocky Mount, N. C.

The first thing to be determined in unloading ballast for various raises is how heavy a ballast line is desired after a raise is completed. Also, the roadbed condition should be considered. I am a great believer in a fully dressed track and a heavy ballast line after the desired raise has been accomplished, as these reduce maintenance to a great extent.

If the above condition has been accomplished and you desire a 1-in raise, very little ballast will be required. About 1 in of additional ballast should be unloaded along the track where this raise is to be accomplished. It can be unloaded before or after the raise according to whichever method is desired.

What's the answer? (cont'd)

For a 4-in raise, it will require ballast to be unloaded to the top of rail, using a 9-ft crosstie to level off and regulate the ballast while it is being unloaded. For a 6-in raise, use the same procedure as for a 4-in raise, but unload heavy enough to have a row or surplus amount of ballast left at the ends of the drag tie. It is often necessary to go over the same area twice in unloading ballast in order to get a uniform distribution of the material, since the ballast we receive for this type of job is loaded in hopper cars.

Prestressing concrete piles

What are the advantages, if any, in prestressing precast concrete piles? Disadvantages? Explain.

Has several advantages

By A. W. CARLSON
Engineer of Bridges & Structures
Western Pacific
San Francisco, Calif.

In comparing ordinary precast concrete piles with prestressed concrete piles, there are several distinct advantages found in the latter.

Where possible, it is desirable to have as long a span as practicable in the structure, and, where the supports occur, to have as few piles as possible. Preferably these piles should be so located that they can be driven through an existing structure with the least interference. For example, when driving through an open-deck structure, it is preferred to use a three-pile bent so that one pile can be driven through the center of the existing timber stringers and one on each side of these existing stringers. Under this criteria, a pile must not only carry heavy axial loads but also substantial lateral loads. These impose large bending stresses in the piles.

The advantages of prestressed concrete here become readily apparent. By placing the pile section in permanent compression of say 700 psi, the handling forces creating flexure stresses of this value can be withstood without damaging the pile. In addition, a prestressed pile not only has the ability to handle these large loads with a section considerably smaller but it also has a hollow core which makes it considerably lighter than an ordinary precast pile. This has the advantage that it permits most railroads to utilize their present pile-driving equipment for driving prestressed piles.

Further, with a pile having a greater bending strength, the handling of piling both in pick up and driving is considerably easier. Also, excessive cracking and spalling can largely be eliminated with the use of prestressed piling, both in driving and in service. Another advantage is that it is now possible to drive them in extremely hard ground without the pile damage experienced with ordinary precast piles.

As to the disadvantages: The prestressed piles are considerably more expensive. To date prestressed piles are usually manufactured by outside manufacturers, and unless a reliable firm is available in the railroad's area, the prestressed members might be difficult to obtain. Also, due to the fact that prestressing must be very carefully done and a very high quality of concrete produced, the manufacturers specializing in prestressed products are the only ones who can produce satisfactory prestressing members until the railroad becomes more familiar with the technique. However, as more experience is gained by the railroads in this new media, these disadvantages will largely disappear.

In conclusion the many advantages of the prestressed piles over ordinary precast concrete piles make them superior for railroad construction work.

Need for architects

To what extent should railroads engage outside architects to design or redesign large facilities? What are the advantages and disadvantages? Explain.

Several factors involved

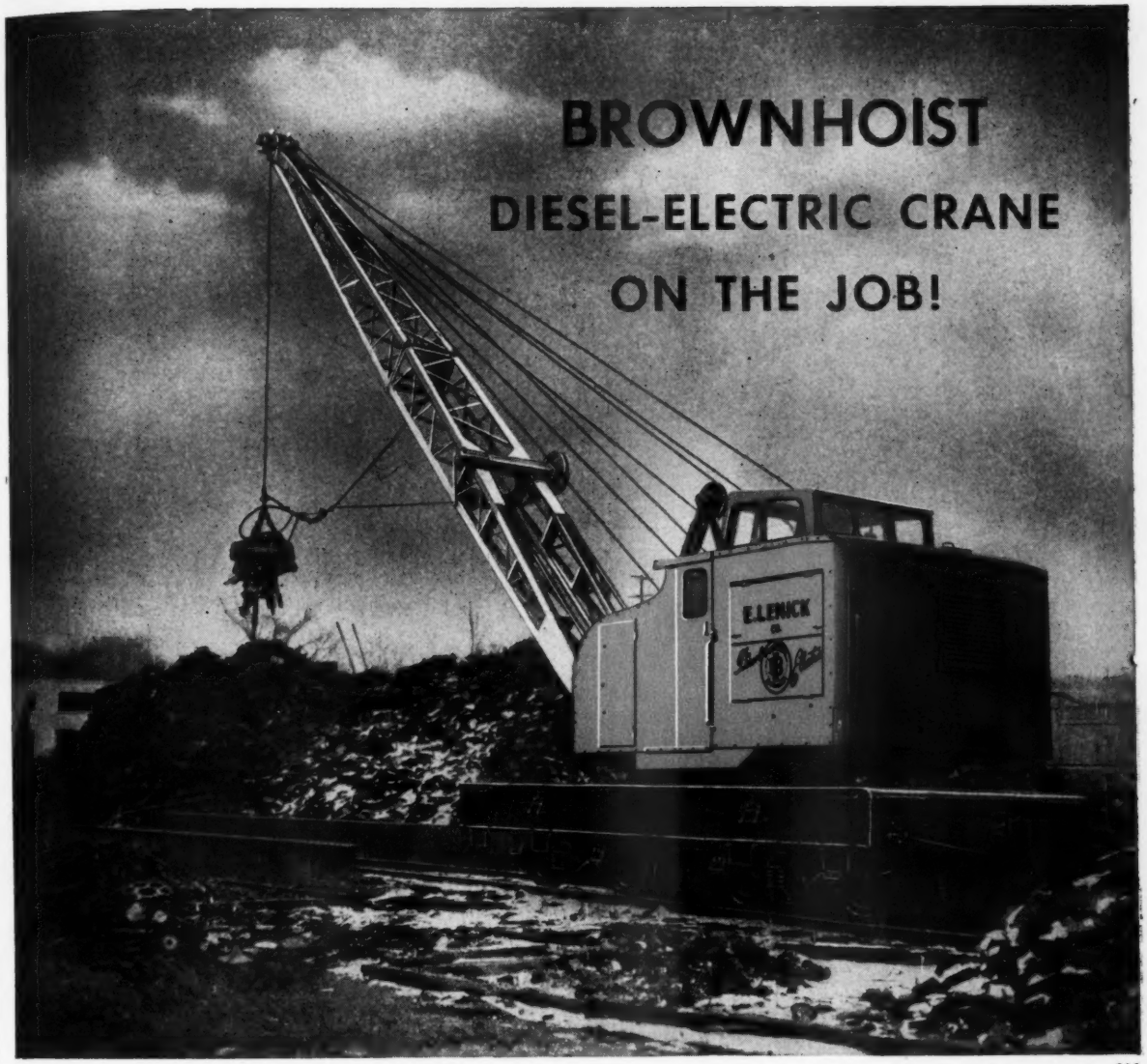
By W. G. HARDING
Architect
Wabash
St. Louis, Mo.

The extent to which railroads should engage outside architects to design or redesign large facilities depends upon several factors. These include the size of the particular railroad's engineering department, whether the project is to be a component part of an overall development or is to be partially financed by a municipality or the federal government.

A small railroad may not be justified in retaining on its engineering staff an architectural force sufficiently large or diversified in ability to develop working drawings and specifications for a large project. Time of completion of both plans and construction may be an important factor, and it may not be possible to employ qualified men for a particular job. Under these circumstances it may be better to engage an outside architectural firm which has a diversified force of architects and engineers to prepare the necessary plans and specifications, advertise for and let bids and see that materials conform to the specifications. In this case, it may also prove better to have the firm furnish inspection service on the job.

If the facilities are to integrated into an overall development, it may be advantageous to engage the architectural firm which is executing the drawings, etc., for the development. In this manner the facility will probably blend into the overall picture rather than have two trains of thought engaged in the development.

If the facilities are a phase of a municipal or federal project, it will



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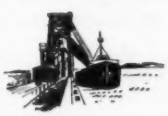
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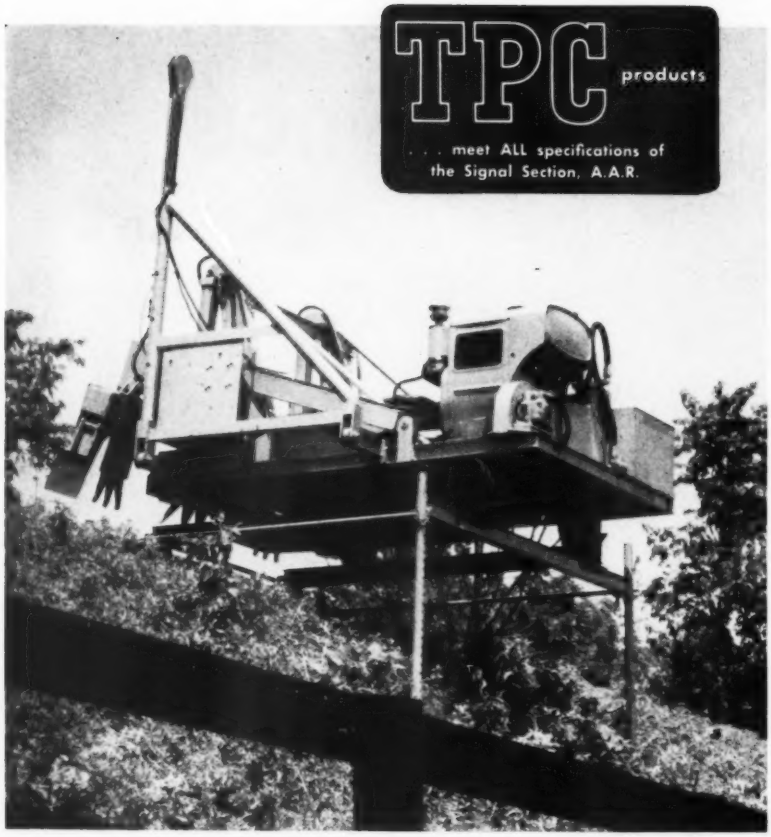

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What's the answer? (cont'd)

probably be profitable and beneficial to have an outside architectural and engineering firm perform a turn-key job of preparing plans, specifications, field inspection and supervision, and make a complete accounting of costs. In this way, running records of costs will be kept by unbiased accountants and the charges will be properly allocated.

Sorting recovered relay material

When relaying rail, is it more economical for the rail gang to pick up recovered spikes, anchors, bolts, nuts and plates and place in separate piles for later loading, or should this be done by another force? Explain. Should the recovered material be sorted on the ground between usable and scrap? Why?

Not practicable on road

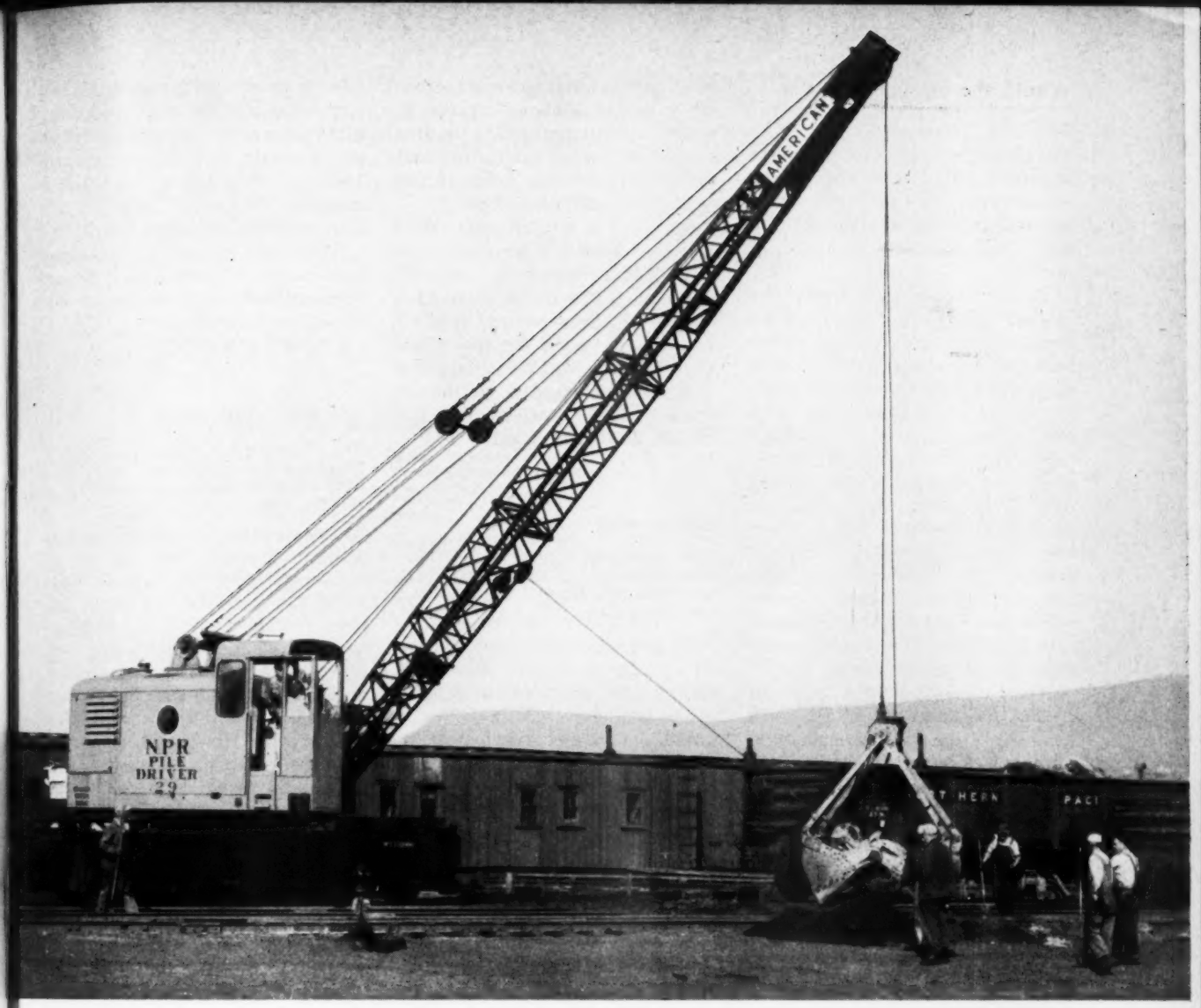
By G. D. MAYOR
Division Engineer
Cheseapeake & Ohio
Huntington, W. Va.

To answer this question categorically is impossible since each railroad has different requirements and facilities for reclaiming released track material after the rail has been renewed.

To reuse bent or throat-cut spikes, cross-threaded bolts or sprung rail anchors is sheer waste of time and money and no track laborer is competent enough to separate reusable and scrap items of this nature at a glance.

Ideally, all scrap should be piled as released, in piles of a size to be handled by an electro-magnet at one stroke. This permits the loading of the released scrap with the same work train that is loading the released rail, at no additional cost except for the additional crane and operator required.

All scrap may then be shipped to a central reclamation plant, where the scrap is sorted. After sorting with the



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use of proper guages or templates, anglebars, spikes, bolts, nuts and rail anchors may be checked, the salvageable ones prepared for shipment as required and the scrap prepared for market.

To make such a separation on line of road is impracticable, if not impossible. Also, the work-train cost to load after such a separation would be excessive, because of the time consumed in handling the many small piles of material.

The writer has had several bitter experiences in attempting to lay released rail on secondary lines, using the small materials released without previous careful sorting. The waste of time and labor in attempting to apply cross-threaded bolts and nuts, sprung rail anchors, etc., with the subsequent shortage of these items which necessarily ensued, was frustrating.

Where all scrap is to be piled for loading, the men throwing the small scrap out of the track preliminary to adzing can easily toss the material into piles one-half rail length apart without loss of time or additional expense. We have found that these will be the proper size piles for our magnet to handle without trouble. Any other method will require additional labor.

However, in isolated cases, where the released rail is to be relaid on the same division, it may be economical to load angle bars and tie plates along with the rail. Small material, however, should be sent to the reclamation plant. Necessary small material should then be requisitioned to lay the rail, which can be furnished from stock or reusable material on hand.

Sort in field

By E. C. Armour
Process Engineer
New York, New Haven & Hartford
New Haven, Conn.

My general answer would be that any salvage ncessitates man-hours, whether it be performed at rail-laying time or later.

With our magnetic equipment, we can perform the work more economically by throwing all material in the gage between tracks or the subgrade, picking out and segregating into small piles any material to be salvaged, and loading it into separate cars with a magnet. The scrap remaining can then be picked up with a magnet.

The reason for sorting this material is to utilize a crane with a magnet which makes this operation much safer as well as economical.

Not the small items

By L. A. Lawson
Roadmaster
Canadian National
Melville, Sask.

When relaying rail it is most economical, I believe, to pick up all recovered spikes, bolts and nuts, anchors, washers and tie plates and place in individual piles. I fully believe that all the tie plates should be sorted as to usable and scrap plates or plates to be repunched for a lighter rail right on the line where the relay is being done. However, I believe that the bolts, spikes, nuts, washers and rail anchors should be placed in separate piles only as far as different kinds of material are concerned and then sorted out at a central place.

All small material has to be piled anyway behind the relay gang and this is usually done by the relay gang men. It is pretty hard for men picking up small material to sort it out as to usable and scrap and then expect it not to become mixed up when loaded.

The sorting would be much better handled at some centrally located place, such as the rail plant, where men are at this work continuously. This type of work is usually given to men not physically fit for extra-heavy work on gangs rather than for their ability to do the work.

However, as the small scrap has to be piled unless a magnet is used, and even then it is piled in most cases, it is no harder to train men to keep bolts, nuts, washers, rail anchors and spikes in separate piles. Even if loaded in the same cars later on, it is sorted much more easily at the central location than if loaded without any regard for what type of small material is put in piles.

I would say then by all means sort the different types of material in piles but not try to sort out usable from scrap material on the line.

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BORN OF RESEARCH
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What's the answer? (cont'd)

Use separate force

By J. W. NEIKIRK
Manager Roadway Maintenance
Norfolk & Western
Roanoke, Va.

In connection with renewing rail, the quantities of fastenings or scrap released varies to such an extent it is difficult to anticipate the exact number of men required each day to assemble or pile it for loading without interrupting the rail force.

To obtain the maximum production with a fully mechanized or specialized rail force, it is very important to have the exact number of men assigned each day to carry out the work in a systematic manner and prevent delays. Consequently, if a crane with a magnet is not available for picking up the scrap, it would be more economical to use a section or small floating force to pile the released material for loading. If a crane is available, is should be furnished with a small magnet to pick up the scrap under the supervision of a floating gang or section force and avoid interrupting the personnel on the rail force

It is expensive and time-consuming to attempt to classify released material in the field. In double-track territory, it has been found to be preferable and more economical to pile the unclassified released material with a magnet working in the same detour under which the rail laying is being performed. The unclassified material can be picked up later and shipped to a centralized reclamation plant where sufficient facilities and qualified employees can classify the material between fit and scrap.

21 Railroads now use 'em!

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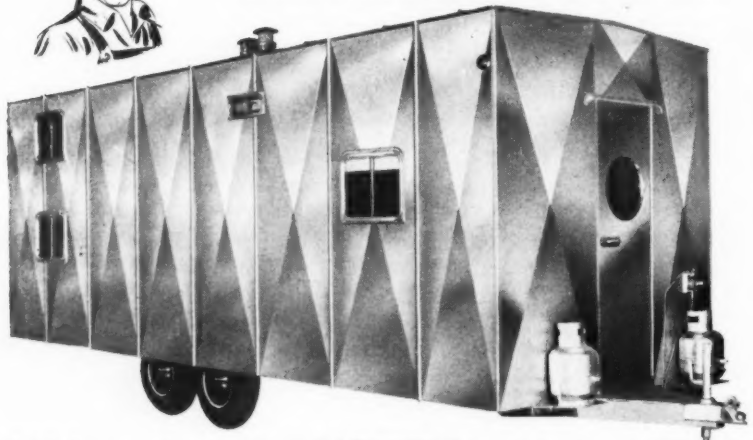

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Placing jacks when surfacing

When surfacing track, what factors determine the spacing and location of the jacking points? Explain. Is the weight of rail a factor?

About 8 ties apart

By C. H. WECKWERTH
Track Supervisor
Chicago, Burlington & Quincy
Powder River, Wyo.

I have had very good success on a 1-in to 2½-in raise using 6 jacks on each side, tamping up to the back jacks and moving the back jacks ahead, using a spot board. With this arrangement I find that, by spacing the jacks 8 or 9 ties apart, regardless of the weight of the rail or location of the joints, a number of additional lifts of low spots is eliminated in obtaining a good surface.

When surfacing with a power jack, I prefer to use the power jack every tenth or eleventh tie and to use a small track jack on each side to raise the low spots that are left by the power jack. I try to arrange this spacing so that the jack is not closer than three ties from a joint so as to eliminate the breaking or bending of angle bars.

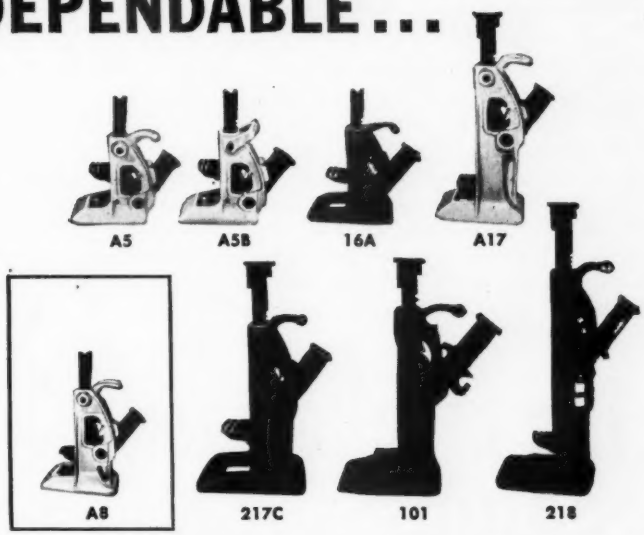
I find that the weight and condition

WORLD'S MOST DEPENDABLE...

SIMPLEX

TRACK JACKS

New Model No. A8, eliminates need for both high and low lift jacks. 15-tons capacity, 15⅝" high with 7¾" lift. Has 2" min. toe-lift height, weighs only 34 lbs.



- Most complete line—14 models
- Available with malleable or aluminum alloy housings
- Large area (2½"x3¼") lifting toe has non-slip grooves
- Lifting ranges from 5 inches to 19 inches
- Thumb guards and trips on both sides
- Lowest toe height—less digging or pounding to set jack

ALSO AVAILABLE—Rail Pullers and Expanders, Tie Spacers, Rail Dollies, Tie Removers and Replacers, Bridge Jacks, Jack Supports, Push and Pull Jacks, Steamboat Ratchets and a complete line of Hydraulic Jacks —Rams, Pumps (hand or powered), Pullers and Accessories.

WORLD'S LARGEST MFGRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS
SIMPLEX JACKS
RE-MO-TROL UTIL-A-TOOL JENNY ROL-TOE

TEMPLETON, KENLY & CO. • 2543 GARDNER RD. • BROADVIEW, ILLINOIS

DESTROYS VEGETATION ON ROAD BEDS, EMBANKMENTS AND DITCHES — QUICKLY CLEARS SNOW FROM YARDS AND SWITCHES

Woolery put its first weed burner in service on a major road in 1925. Today's advanced design, the model C.O.E., embodies every refinement made in more than 30 years of continuous improvement.

All Woolery design changes are for increased efficiency with no loss of simplicity . . . *no sacrifice of the famous Woolery easy maintenance features.*

THE FAMOUS WOOLERY HEAVY-DUTY WEED-BURNER is an excellent SNOW-MELTER

- TORQUE CONVERTER drive on propelling engine.
- ELECTRIC IGNITION to all five firesist alloy steel burner heads. Burners can be used individually or all five together. Outer burners can be manipulated from cab while machine is in operation.
- ALL STEEL CAB. Doors fasten half-open to deflect heat and scoop in air.
- TWO BRAKING SYSTEMS. Power for service, manual for parking or emergency.
- CHOICE OF ENGINE MAKES . . . Also available in 3-burner, 2-burner or 1-burner models.

Literature and specifications on request.

Also manufacturers of Woolery Tie Cutters, Tie End Removers, Bolt Tighteners, Spike Drivers, Track Tool Transporters, Motor Cars and Joint Oilers.

WOOLERY MACHINE CO.

Established 1917 • 29th & Como Ave., S.E.
MINNEAPOLIS, MINN.

What's the answer? (cont'd)

of the rail makes this method variable as to the number of low spots to be raised back of the power jack. In considering this method of spacing with the power jack, it must be kept in mind that the track is to be raised with a minimum number of men and that the power jack must not delay the men and the tamper which are finishing the track back of the power jack.

About 16 ft apart

By J. R. CHAPMAN
Roadmaster
Atchison, Topeka & Santa Fe
Williams, Ariz.

The weight of the rail is definitely a factor in determining the spacing and location of the jacking points. However, on any weight of rail, if the jacking points or spaces are too far apart, a low quarter is the result, making it necessary to use a spotting jack more frequently.

It is also necessary to consider the weight of rail and the condition of the track as to how much ballast hangs in the eye of the tie. Then the jacking points should be spaced for obtaining a good smooth raise.

It is my experience that on 131-lb or 132-lb rail, the best spacing is about 16 ft apart.

Second space ahead

By W. D. AKERS
Roadmaster
Virginian
Mullens, W. Va.

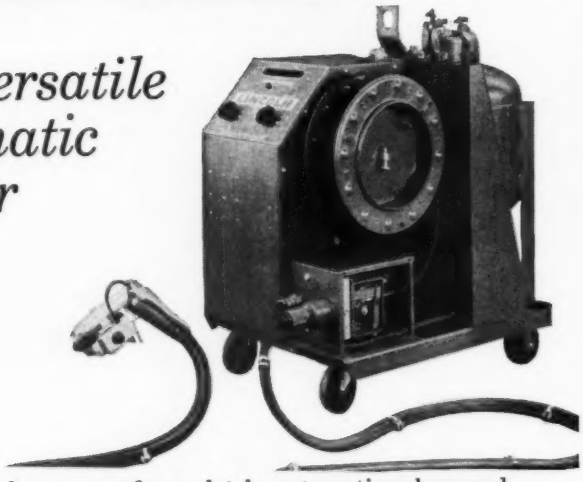
From my 33 years of experience in handling track jacks in surfacing 131-lb or 132-lb rail, I believe the jacks should be set in the second space ahead of the joints and centers. Because this rail is larger, there is no bending or springing down in the quarters. Setting the jacks in these spaces results in a smooth surface. It is not necessary to set the jacks back in the quarters.

On the 85-lb, 100-lb and 130-lb rails, I also always set the jacks in the second space ahead of the joints and centers. But I have found that these weights of rail are springy and that they bend down at the quarters. Consequently, after bringing the front jacks to the desired surface by a spot board, it is then necessary to set extra jacks in the quarters behind the front jacks to bring up the low or bent-down places in the rail to a smooth surface. I always use three jacks to a side and keep my pulling blocks just back of the third back jack.

On the Virginian, the 131-lb and 132-lb rail is 39 ft in length, with the joints breaking 19 ft 6 in. On the 85-lb, 100-lb and 130-lb P.S. rail, the standard length is 33 ft, the joints breaking 16 ft 6 in.

The mechanized "SQUIRT" welder...

most versatile automatic welder



All the advantages of completely automatic submerged arc welding:

- It's fully automatic (guided by hand)
- It's semi-automatic (with travel motor off)

Write us for detailed information about how the ML-3 Mechanized "Squirt" Welder can cut your welding costs.

The Lincoln Electric Railway Sales Co.
11 Public Square • Cleveland 13, Ohio
Railroad representatives of

The World's Largest Manufacturer of Arc Welding Equipment

LINCOLN

THE LINCOLN ELECTRIC COMPANY • CLEVELAND 17, OHIO

Biographical briefs (cont'd)

(Continued from page 10)

further promoted to assistant regional engineer at New York in 1958, the position he held at the time of his recent promotion.

Delmar L. Walker, 33, who was recently promoted to general forman bridge and building and water service on the Frisco at Ft. Smith, Ark. (*RT&S,* June, p. 10), was born in West Virginia and graduated from West Virginia University in 1951 with a Bachelor of Science degree in civil

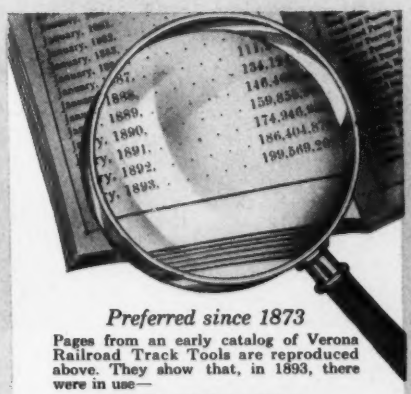
VERONA SPECIAL
VERONALLOY
NUT LOCKS...

Maintain great bolt tension through a wide reactive range. This is made possible by the non-fatiguing characteristic of Veronalloy Steel.

Keep rail joint assemblies in proper condition by maintaining high bolt tension.

Reduce angle bar wear and rail batter. Every Veronalloy Nut Lock is heat-treated and tempered, and receives a full compression test before shipment.

Saves track maintenance expense by eliminating necessity for periodic tightening of bolts, and joint tamping.



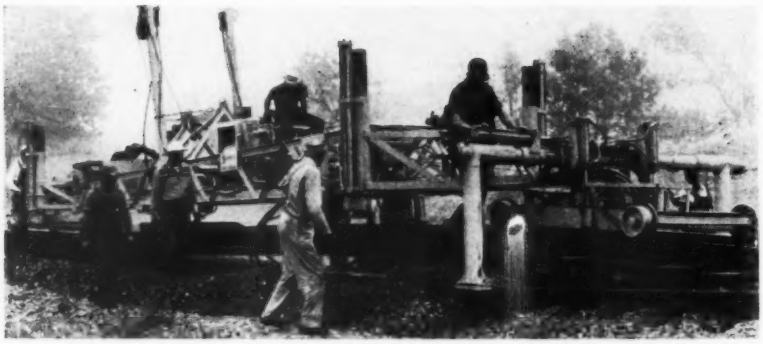
Preferred since 1873

Pages from an early catalog of Verona Railroad Track Tools are reproduced above. They show that, in 1893, there were in use—

199,569,202
VERONA NUT LOCKS!

Woodings-Verona
TOOL WORKS

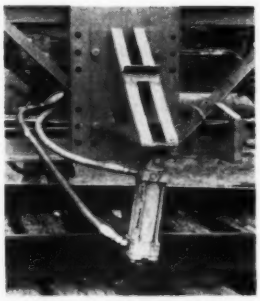
Main Office and Plant: **VERONA, PA.** • *Sales Offices:* **CHICAGO, ST. LOUIS**



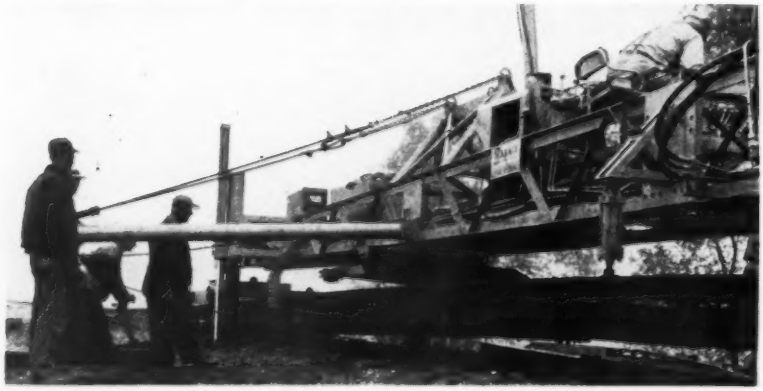
Machine knocks off, ejects ties, lines track behind plow while above subgrade.

Mannix AUTO-TRACK Eliminates 15 to 20 Men

PLOWING, TIE REPLACEMENT, TRACK ALINEMENT are accomplished faster and with fewer men using the new Mannix AUTO-TRACK unit.
Hydraulic hammer on each side knocks tie down. Conveyor belt ejects tie to either side.



Lining head controlled by levers near rear end where operator observes alinement. One man replaces lining



Unit raises track, pulls plow under or out from under track. Trained crew removes machine from track in about 10 minutes.

Ask for details of MANNIX service and special rental plan. Arrange for showing of operating films with no obligation. Write, wire or phone TODAY.

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Minneapolis 16, Minn.
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Biographical briefs (cont'd)

engineering. He entered the service of the Frisco in 1951 as a rodman at Memphis, Tenn., and served subsequently as a student apprentice at Enid, Okla., and Tulsa, student supervisor at St. Louis, Mo., and assistant roadmaster at Sherman, Tex., and Tulsa. Mr. Walker was promoted to roadmaster at Chaffee, Mo., in 1956 and to assistant industrial engineer at Springfield, Mo., two years later. He was later appointed assistant general foreman bridge and building and water service at Ft. Smith, the position he held at the time of his recent promotion.

G. L. Ellms, 53, who was recently promoted to engineer maintenance of way of the Lehigh & Hudson River at Warwick, N.Y. (*RT&S*, July, p. 10), was born at Sudbury, Mass., and graduated from Northeastern University in 1927. He entered railway service with the New York, New Haven & Hartford in 1925. After serving in various positions in the engineering corps he was promoted to assistant track supervisor in 1939. Mr. Ellms was further promoted to track supervisor in 1946 and to assistant division engineer five years later. In 1953 he joined the Lehigh & Hudson River as assistant engineer maintenance of way, the position he held at the time of his recent promotion.

George J. Bleul, who was recently promoted to assistant engineer of buildings of the Baltimore & Ohio at Baltimore, Md. (announced elsewhere in this issue), was born at Woodhaven, L.I., N.Y., and graduated from Lehigh University in 1947 with an engineering degree. Mr. Bleul served with the U.S. Army in World War II. He was serving as designing engineer in the office of the engineer of bridges and buildings at the time of his recent promotion.

Kenneth J. Anderson, 44, who was recently promoted to roadmaster on the Milwaukee Road at Lewiston, Mont. (*RT&S*, July, p. 10), was born at Watson, Minn. He entered the service of the Milwaukee in 1934. During World War II he served with the U.S. Army Engineers in Alaska and Southwest Pacific. Mr. Anderson returned to the Milwaukee in 1946 and was appointed section foreman at Ellendale, N.D., serving also in this capacity at Wheaton, Minn., Odessa, Minn., and Milbank, S.D. He was promoted to extra gang foreman in 1953 and general foreman in 1958. Mr. Anderson was serving in the latter capacity at the time of his recent promotion.

G. L. Ellms
L&HR

George J. Bleul
B&O

Max A. Ferguson, 29, who was recently promoted to supervisor track on the Pennsylvania at Grand Rapids, Mich. (*RT&S*, July, p. 10), was born at Seymour, Iowa, and graduated from Iowa State College in 1952. He entered the service of the PRR in June 1952 as a junior engineer at Urbana, Ohio. In October of that year he entered military service, serving until June 1955. At that time he returned to the PRR and was appointed junior engineer at Greenville, Ill. Mr. Ferguson was promoted to assistant supervisor track at Wilmington, Del., six months later. He was serving in this capacity at Baltimore, Md., at the time of his recent promotion.

Association News

Northwest Maintenance of Way Club

At its second meeting of the current season, to be held on October 22, the club will hear a discussion of "Asphalt Treated Roadbeds." There will be two speakers—R. H. Beeder, chief engineer system, Santa Fe, and John M. Griffith, engineer of research, The Asphalt Institute. The presentation will include colored moving pictures and slides. The meeting will be held at Coleman's in Highland Park, 2239 Ford Parkway, St. Paul, Minn.

At the first meeting, held on September 24, the speaker was W. B. Blix, manager, Railway Equipment Division, Nordberg Manufacturing Company, who spoke on "Mechanization of Maintenance of Way—Where do We Go from Here?"

Maintenance of Way Club of Chicago

The first meeting of the season will be held on October 26 at the Hamilton Hotel, Chicago, with dinner starting at 6:30 p.m. The principal speaker will be Max K. Ruppert, president of Poor & Co. During a trip to Australia, Mr. Ruppert had the opportunity of observing a method used to solve the problem of gage on a new railroad. His address will be built around these observations and will be illustrated by moving pictures.

Railway Tie Association

The annual meeting of the Railway Tie Association will be held at the Netherland-Hilton Hotel, Cincinnati, Ohio, October 28-30. Registration will start on October 27.

The program will include a number of addresses of special interest to railroad men. Frank R. Woolford, chief engineer, Western Pacific, will speak on "Changes in Crosstie Replacements;" R. B. Smith, buyer of forest products and manager treating plants, Rock Island, will describe "The Rock Island's Thinking on Crossties;" E. A. Bromley, vice president, Canadian National, will discuss "The Ties that Join Two Great Countries;" G. M. Magee, director of engineering research, AAR, will describe the "Advantages and Disadvantages of Pre-

Model 210 A-W Hydraulic Crane, equipped with clamshell attachment on 10-ft. boom extension, performs yard maintenance work at the C&O's Plymouth Yard in Michigan.

C&O terminal supervisor of track says:

Maneuverable, maintenance low . . . Austin-Western Hydraulic Crane good for all-around work

"The Austin-Western Hydraulic Crane is a good all-around piece of equipment for railroad terminal maintenance work," comments Harry Haines, supervisor of track of the Chesapeake & Ohio's Detroit Terminal.

Goes anywhere to do anything

Mr. Haines adds, "This piece of equipment is very versatile and has no trouble navigating over rough terrain or railroad tracks. We use it as a crane to unload ties and handle rail and other track material, and at times attach a ⅜-cu.-yd. bucket for redistribution of ballast, cleaning ditches, etc."

All-wheel drive and steering

Learn more about versatile A-W hydraulic cranes. Telescoping booms swing 360°. Self-propelled, rubber mounted—gasoline or diesel powered. 5 models—110, 210, 210-P, 220 and 410. All-wheel drive and steering assure plenty of power and traction . . . outstanding maneuverability. Also available for truck or stationary mounting.

Rail crane attachment optional for on-or-off track operation. New disconnect clutch, optional with Ford 332 gas engine, permits road speed of 35 mph plus! Attachments include remote control maintenance platform, orange peel and clamshell buckets, magnet, and load-carrying platform. Contact your Austin-Western distributor today for full information or write to us.

Keeps yards, terminal areas extra clean—A-W Motor Sweepers in 2-yd. and 4 plus-yd. models.

Austin 1859 AUSTIN WESTERN 1959 100th YEAR PARTNERS IN PROGRESS Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
BALDWIN BLH LIMA-HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

Rail-Road Conversion Unit installed on 1959 Ford Station Wagon

Best thing that has happened to M/W crews since the handcar was invented!

Rail-Road CONVERSION UNIT

TRAVELS OVER RAIL OR ROAD

ideal for track and right-of-way inspection or hauling men, materials and tools to job!

Adaptable to any make of passenger automobile or light truck, the manually-operated **Rail-Road** assembly, with retractable flange-type guide wheels, locks underneath vehicle with exceptional highway clearance. Because it makes possible fast, economical travel on either track or highway, the unit has been given wide acceptance by railroads.

The **Rail-Road** adds less than 300 lbs. weight at each end of vehicle, carries from 30% to 35% of the entire vehicle weight to insure positive on-rail performance. Simple, trouble-free locking mechanism holds Unit in place for both rail and highway operation. Less than a minute required for on-track positioning or for removing from track. Simplicity of precision construction insures long, trouble-free life of Unit. Low initial cost... and Unit is re-usable on other vehicles with slight changes.

Now available also on LEASE terms!

Under attractive new long-term lease plan, vehicles (choice of sedans, station wagons, pickups, panel trucks) are furnished with the **Rail-Road** Unit installed.

Write or phone for full information . . . or for a no-cost DEMONSTRATION on your line!

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CANADA: Sylvester Distributors Limited • Kent at Victoria • Lindsay, Ontario
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Association news (cont'd)

stressed Concrete Relative to Treated Wood Ties;" F. J. Fudge, timber engineer, New York Central, will deal with the subject, "The AREA Looks at Ties;" and Clyde J. Fitzpatrick, president, Chicago & North Western, will speak on "The Business of Railroad Progress."

There will, of course, be the usual committee reports, as well as addresses of particular interest to tie producers.

American Railway Engineering Association

The Nominating committee met at the Conrad Hilton Hotel, Chicago, on September 15 under the direction of G. W. Miller, chairman. Mr. Miller is assistant general manager (special duties) of the Canadian Pacific, and a past president of the association. The committee nominated a slate of officers which will be announced on November 1.

The next meeting of the Board of Directors will be held on November 6 at the Sherman Hotel, Chicago.

A meeting of the committee on convention arrangements will be held at the Sherman Hotel on November 5, to make preliminary plans for the 1960 convention.

Several standing committees have scheduled meetings to be held in October. These include the following:

Cooperative Relations with Universities, October 9-10, Michigan College of Mining and Technology, Houghton, Mich.; Wood Preservation, October 27, Netherland-Hilton Hotel, Cincinnati, Ohio; Iron and Steel Structures, October 28-29, University of Illinois, Urbana, Ill.

To date only one committee is scheduled to meet in November. The committee on waterproofing will meet on November 5-6 in the B&O office building, Pittsburgh, Pa., and will also inspect the research laboratories of the Koppers Company, Inc.

Association of Track and Structure Suppliers

The annual meeting of this association was held at the Coliseum, Chicago, on September 16. The meeting took place during the exhibition sponsored by the association in conjunction with the annual conventions of the Roadmasters' and Bridge & Building Associations.

With President A. J. Reading (Nalco Chemical Company) presiding, a number of items of routine business was considered, including the reports of the secretary, the treasurer and the director of exhibits. In giving the latter report, Lewis Thomas estimated that a total of about 3000 railroad men would attend the exhibition. He also reported that the association has 149 members of which 113 were exhibiting at the time.

In the election of officers, Leo Flinn (Dearborn Chemical Company) was ad-

vanced from first vice president to president; Ray T. Johnson, Jr., (Mid-West Forging & Manufacturing Co.) was advanced from third vice president to first vice president; P. J. Wolf (Maintenance Equipment Company) was moved up from secretary to second vice president; H. R. Deubel (Chicago Pneumatic Tool Company), treasurer of the association, was elected third vice president; C. L. Rager, (Fairmont Railway Motors, Inc.), also a director, was elected secretary; and A. L. Fridley (Unit Rail Anchor Corporation) was advanced from director to treasurer.

Directors elected for three-year terms are: C. E. Godfrey (American Brake Shoe Company), H. R. Miller (Linde Company), and Frank Richter (Watson Publications). W. B. Blix (Nordberg Manufacturing Company), was re-elected a director to serve for two years, W. C. McKay (Kershaw Manufacturing Company) was elected a director to serve for one year.

Supply Trade News

AMERICAN HOIST & DERRICK CO. — This company has announced the acquisition of the firm of Hetherington & Berner, Indianapolis, Ind. **Donald R. Berner** has been appointed general manager of the new subsidiary.

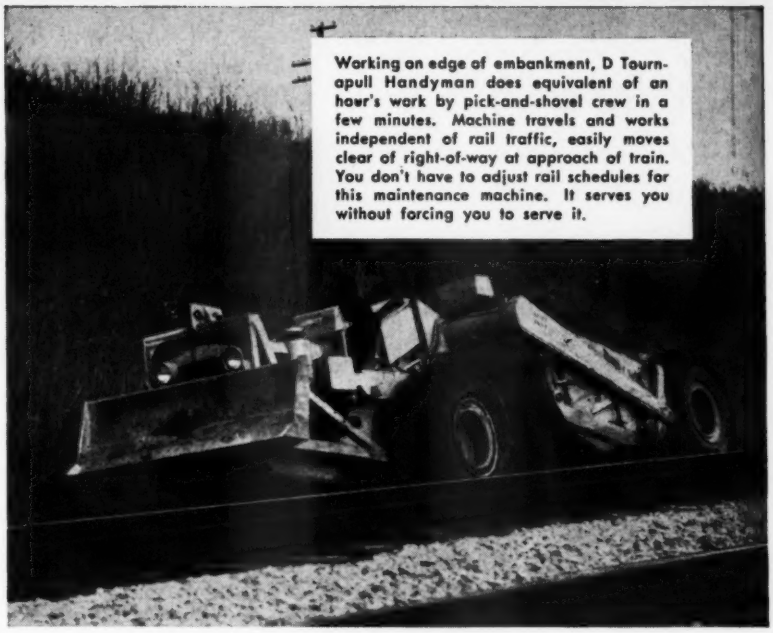
DOW CHEMICAL COMPANY—Paul M. Ritty, who has been in charge of herbicide and defoliant projects in the southeastern states, has been placed in charge of industrial vegetation control projects for the agricultural chemicals development section of this company. He succeeds **L. L. Coulter** who has been promoted to supervisor of the herbicides-agricultural chelates section of agricultural chemicals development.

In his new assignment, Mr. Ritty will work with railroads and other industries on the control of weeds, brush and grass. He received a Bachelor of Science degree in biology and chemistry from St. Louis University and a master's degree in ecology and entomology from Kent (Ohio) State University. Mr. Ritty worked in agricultural chemicals research for the Boyce Thompson Institute and the B. F. Goodrich Company prior to joining the Dow Chemical Company.

LINDE COMPANY—This company, a division of Union Carbide Corporation, has announced the formation of the Oxweld Rail-

William S. Winn
Linde

Paul M. Ritty
Dow Chemical



Working on edge of embankment, D Tournapull Handyman does equivalent of an hour's work by pick-and-shovel crew in a few minutes. Machine travels and works independent of rail traffic, easily moves clear of right-of-way at approach of train. You don't have to adjust rail schedules for this maintenance machine. It serves you without forcing you to serve it.

Save time and expense on right-of-way maintenance

handle scattered clean-up with 1-man D 'Pull*

NOW much of the load-haul-and-spread operations on your right-of-way maintenance can be a one-man, one-machine operation—with the LeTourneau-Westinghouse D Tournapull® Handyman. This self-propelled, rubber-tired scraper isn't tied to rails. 138 hp, 9-yd "D" can be push-loaded, or will self-load up to about 75% of capacity. It travels shortest route to work — via right-of-way, highway, or cross-country — at speeds to 29.5 mph.

Once the 'Pull operator has his orders, he's on his own — doesn't have to wait around for a crew, work train, or dispatcher orders. Nor does he have to wait for main line clearance. He goes directly to his work, at roading speeds to 29.5 mph . . . gets into action as soon as he arrives!

Tires float over obstacles

Low-pressure tires of D 'Pull provide a smooth-rolling surface for travel. Yet, tire lugs bite in deep when pulling power is needed. These 5'-high, 1½'-wide pneumatics flex over rails, ties, and other obstacles with a cushioning action . . . roll across tracks or over switches without causing or taking damage.

For close work in confined quarters — a common situation on right-of-way embankments — "D" has high maneuverability. This L-W Handyman turns 180° in 24'8" . . . eases through narrow 8' cuts . . . travels via highway in all 48 states without permit. Electric controls are quick and positive.

Interchange hauled work units

A dozer blade is available for the D 'Pull. The hauled scraper can also be interchanged with a Rear-Dump body behind the same prime-mover, for hauling shovel-loaded material. Or with a lift-and-carry crane, with an arch suitable for hauling rails, poles — equipped with 61,500-lb-pull electric winch. Also available are interchangeable flatbed and side-dump haulers.

Compare with present methods

Get all the facts on the versatile, mobile 143 hp Tournapull no v. Compare its work and travel performance . . . its manpower requirements . . . with whatever combination of men and machinery you may be using at present. Write for complete specifications on the versatile "D".

*Trademark DP-1832-RR-2/3

LETOURNEAU-WESTINGHOUSE COMPANY
Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

LW

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HOWARD & GOULD
TIE-BORING
TWIST DRILLS

Preferred by track departments now using them. Made of the toughest drill steel and designed for PREMIUM PERFORMANCE WITHOUT PREMIUM PRICES.

FOR NORDBERG TIE DRILLS and DUN-RITE GAGING MACHINES

FOR RACO TIE DRILLS

Improved HOWARD & GOULD drill bits have proved to be the best labor and money savers for field tie boring. Breakage is minimized and less drills are used per job.

Four Standard recommended sizes are normally stocked for prompt delivery. Non-standards up to size ⅝" x 12" supplied on short order.

Bulletin on request.

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5306 W. Lawrence Ave., Chicago 30, Ill.

PILING specialists to the railroads

Steel-Sheet Piling
Foster Lightweight Piling
H-Bearing Pile • Pipe Pile
Construction Products

Take advantage of "Faster-from-Foster" service plus "single-source" buying for all your piling and construction needs. Get on-time deliveries from Foster's nationwide warehouse and field stocks.

Refer to our catalogs in Sweet's File

Rail • Switch Material • Track Accessories • Pipe

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HOUSTON 2 LOS ANGELES 5 ATLANTA 8

Supply trade news (cont'd)

Floyd T. Ridley
Morrison

James S. Boggs
Union Metal

road Department of Linde Company. In making the announcement **William B. Nicholson,** president of the company, said: "The establishment of this department marks an important step forward, and will result in more rapid and efficient application of Linde's products and services to railroad fabrication and maintenance problems."

William S. Winn, manager of Linde's Eastern Region sales, has been appointed manager of the new department with headquarters at New York. Other appointments include **R. H. Bennewitz** as manager, railroad sales; **W. G. Gumm** as manager, railroad engineering, both with headquarters at Chicago; **C. R. Strutz** as sales manager of the Eastern Zone; and **H. R. Miller** as sales manager of the Midwestern Zone. The appointment of a Western Zone sales manager will be announced at a later date.

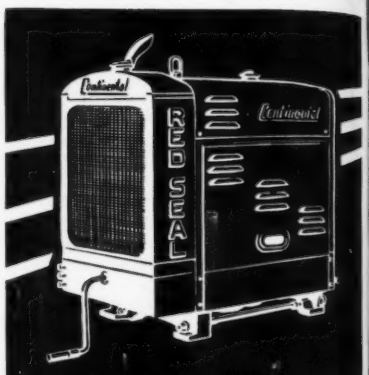
Mr. Winn received his higher education at Louisiana State Normal College and Louisiana State University. He has been associated with Linde Company for 34 years in various capacities, including manager of the company's Tulsa, Houston and Pittsburgh sales offices and assistant manager, gas sales, at New York.

MORRISON RAILWAY SUPPLY CORPORATION—This company has announced the election, effective October 1, of **Floyd Thomas Ridley** as vice president, sales, development and traffic, with headquarters at Buffalo, N.Y. Prior to assuming this position he was director of operations and traffic for the Republic Tank Car Company, New York. Mr. Ridley joins the Morrison organization with a 40-year background in industry and railroading. His previous experience includes service as traffic manager for E. I. duPont de Nemours & Co.; Western District traffic manager of the Kansas City Southern-Louisiana & Arkansas; and director of development and traffic manager of the American Cyanamid Company.

UNION METAL MANUFACTURING CO.—This company has announced the opening of a new West Central District office at Kansas City, Kan. **James S. Boggs** has been appointed branch manager and will handle the sale of all the company's products in Kansas, Nebraska, Iowa and Missouri.

Obituary

Edward A. Condit, 78, who retired in 1955 as president of the Rail Joint Company, subsidiary of Poor & Co., died early in August after a long illness.



YOURS FOR RUGGED STAMINA, ECONOMY, AND LONG LIFE: DEPENDABLE RED SEAL POWER

PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON, MICHIGAN

CLASSIFIED ADVERTISEMENTS

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We'll inspect and purchase "as is" all sizes, plus tie-plates and angle bars, in track or in storage wherever they are. *For prompt inspection and bid, call*

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Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

•

MECHANIZED TRACK SPIKING. The Racor Dual Spike Setter and the Racor Dual Driver, DD4, are described and illustrated in a new four-page brochure. The operation of both units is described as well as the advantages of their use for setting and driving line spikes. The features of each machine are included. The Racor Spike Distributing Cart is also shown and briefly described. (Write: *American Brake Shoe Company, Dept. A-RTS, 530 Fifth Ave., New York 36, N.Y.*)

MOTOR GRADERS. A new 3-color, 16-page brochure, entitled "More For Your Money," is available which describes the L-W line of motor graders. Designated Form MG-155, the brochure is profusely illustrated with photographs and diagrams which show the operational and design features of the machines. The advantages of using the L-W line of motor graders are also pointed out. The optional equipment available for use with the units is shown and briefly described. (Write: *LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill.*)

ELECTRIC PLANTS. Diesel Folder F-142 is available which describes and illustrates the entire line of Onan diesel-powered electric generating plants. The 4-page, 2-color folder gives specifications of air-cooled plants ranging in size from 3000 to 6000 watts and water-cooled plants from 10,000 to 230,000 watts. A table is included which lists representative models of each type. Diesel-driven marine electric plants are also briefly described. The folder gives a list of accessories and controls that are available for use with the plants. (Write: *D. W. Onan & Sons, Inc., Dept. RTS, Minneapolis 14, Minn.*)

CONCRETE-FLOOR REPAIRS. A new bulletin is available which describes seven procedure steps for repairing damaged floors using Embeco pre-mixed mortar. The bulletin EPMM-4, describes and illustrates how the material is used to make non-shrink repairs to cracks, holes and ruts in concrete floors. Also included are the strength and shrinkage comparisons between the material and plain mortar. (Write: *The Master Builders Company, Dept. RTS, Cleveland 3, Ohio)*

CRANE-EXCAVATOR. Bulletin CR-350 is available which describes and illustrates the Bantam Model CR-350 Crane-Excavator. The new 12-page, 2-color bulletin describes the operating features and the standard and optional mechanical features of the 11-ton self-propelled machine. On-the-job photographs show various applications of the unit. Also included are brief descriptions of attachments that are available for use with the CR-350 including back hoe, shovel, dragline, clamshell, tamper, pile driver, concrete bucket and magnet. (Write: *Schield Bantam Company, Dept. RTS, Waverly, Iowa*)

AIR COMPRESSORS. A new booklet, Form 1548, entitled "Compressed Air Fundamentals" is available. The booklet describes the basic principles of compressed air, including how it is compressed, single and two-stage compressors, piston displacement, actual delivery, regulation and types of control. Terminology and definitions used in connection with the compression of air are also given. Charts are included which may be used as a guide for selecting machines to operate various types of equipment. (Write: *Ingersoll-Rand Company, Dept. RTS, 11 Broadway, New York, N.Y.*)

METALLIZING. A new clothbound handbook is available which covers all phases of modern metal and ceramic flame spraying. The Metallizing Handbook has 345 pages of "how-to" information for anyone concerned with product design, materials engineering, machine maintenance and corrosion protection of iron and steel structures and exposed equipment. The book is profusely illustrated with pictures, diagrams, charts and tabulated engineering data, including cost estimating, physical properties, tensile strengths, hardness, spraying speeds and other coating characteristics. List price is $5.00 postpaid. (Write: *Metallizing Engineering Company, Inc., Dept. RTS, 1101 Prospect Ave., Westbury, L. I., N. Y.*)

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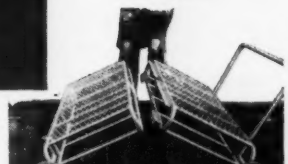

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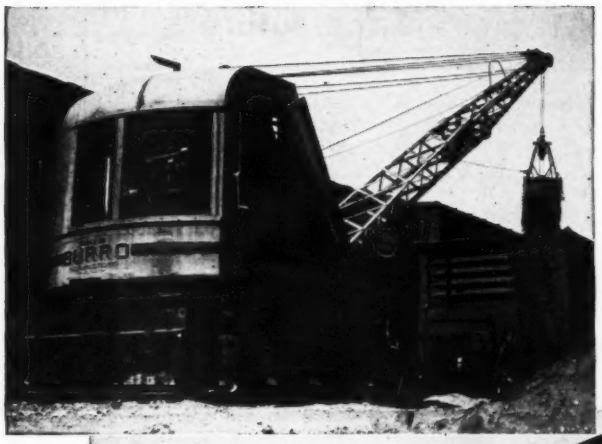

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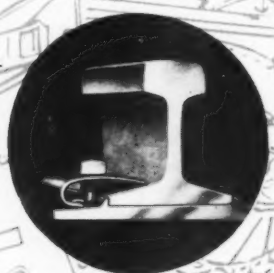

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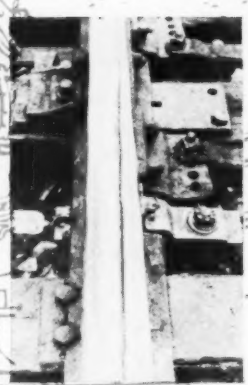

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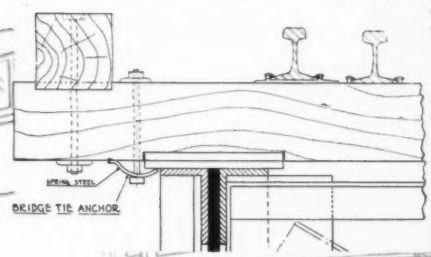

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